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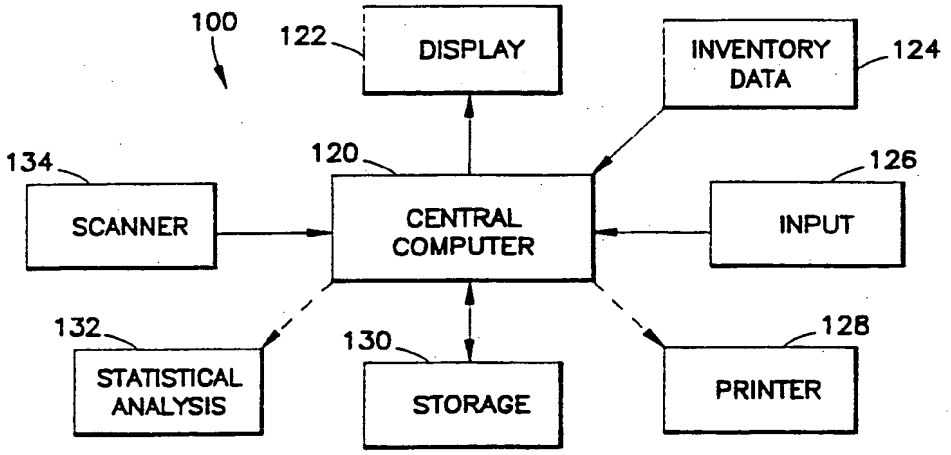

(57) Abstract

A system is provided for visually displaying foot images and overlaying of an image of selected footwear which includes a visual display (122) for displaying a measured foot image and an image of a selected footwear as well as an input device (126) for causing relative movement between the image of the selected footwear and the measured foot image to electronically determine the fit of the selected footwear with the measured foot. The system may include a foot measuring device (134) for measuring the foot and producing an image of the foot on the visual display (122) and a footwear database for providing selected footwear data to the visual display (122). In addition, an integrated system is provided for footwear visual image cataloging and selection which includes a foot measuring device (134) for electronically measuring a customer's foot, a data processing device (120) for receiving foot measurement data, customer identification data and customer preference data, a storage device (170) for storing a footwear catalog comprising footwear images and footwear related data, and a visual display (122) for displaying images and data related to the measured foot, suggested footwear images and suggested footwear related data stored in the footwear catalog wherein the suggested footwear images and footwear related data are automatically selected by matching the customer preference data and foot measurement data to footwear related data in the footwear catalog.

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SYSTEM OF IMAGING, CATALOGING, AND OVERLAYING FEET AND FOOTWEAR

Field of the Invention

This invention relates in general to the footwear manufacturing process including sales from a retail store, footwear design, last production, and finally the manufacturing of footwear. More particularly, it relates to an integrated computerized system for measuring and sizing feet and providing custom fit footwear for customers while maintaining optimized inventory of footwear for retail stores and manufacture of footwear. In addition, through statistical analysis of customer orders, it can be determined which footwear lasts are most likely to be required for producing footwear to fit a particular portion of the general population. This system thereby enables more accurate and efficient production of footwear and lasts for the general public consumption. Further, the present invention utilizes the foot sizing method and last production method disclosed in a co-pending U.S. Patent Application Serial No. 416,624, filed October 3, 1989, hereinafter referred to as the TWAC™ measurement system.

Background of the Invention

Throughout modern history, the footwear industry has been a highly specialized and competitive environment. Most footwear manufacturers have felt a need to be as efficient as possible while providing high quality footwear for the majority of consumers. In recent years, this desire for efficiency has been increased due to the rise in international trade and competition as well as increased consumer demand. Therefore, footwear manufacturers have found it necessary to adapt to the market conditions by providing as many styles and sizes of shoes as possible to the public to better serve the needs of the consumers. Until recently, computerized automation of the footwear

region image defined by a footwear inner perimeter image and a footwear liner image on the visual display in overlaying relation to the foot image to determine whether the selected footwear will fit on the measured foot. In addition, the method may include the step of assigning a color hue to a portion of the foot image located within the liner region image such that the color of the foot image portion within the liner region image is different from the color of the foot image not within the liner region image.

In addition, the system also provides for footwear visual image cataloging and selection which includes a foot measuring device for electronically measuring a customer's foot, a data processing device for receiving foot measurement data, customer identification data and customer preference data, a storage device for storing a footwear catalog comprising footwear images and footwear related data, and a visual display for displaying images and data related to the measured foot, suggested footwear images and suggested footwear related data stored in the footwear catalog wherein the suggested footwear images and footwear related data are automatically selected by matching the customer preference data and foot measurement data to footwear related data in the footwear catalog. An integrated method is provided for footwear visual image cataloging and selection comprising the steps of measuring a customer's foot, inputting customer information and preference data, storing a footwear catalog comprised of images and data related to available footwear, automatically selecting suggested footwear for the customer and visually displaying images and data relating to the measured foot and suggested footwear.

Brief Description of the Drawings

Figure 1 is a block diagram showing a

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of the present computerized system. The present computerized system encompasses a preferred footwear manufacturing environment from the retail store outlet through the manufacturing process and back to the retail footwear store. In particular, within the preferred retail footwear store 102, an electro-optical foot scanner unit 100 would preferably be placed to determine customer footwear size needs. Foot scanner unit 100 would derive a three-dimensional topographical image of a particular customer's feet. From the electronically derived topographical image of the feet, a foot size is electronically computed. The foot size could be assigned according to any foot sizing method including, for example, the Brannock measuring system, the TWAC™ measurement system and others. Foot measurement information for the particular customer would be stored in a database for a later transference to a centralized database. After determining the particular size of footwear required for the customer, a substantially instantaneous electronic query can be made by way of a computing device into electronically stored inventory data to determine if such a size is available of the desired footwear to provide to the particular customer.

By way of example, the following will describe the procedures for transferring the foot sizing information of a particular customer to the manufacturing facilities so that custom fit footwear can be made and subsequent transference of that finished product back to the retail footwear store is accomplished. After electro-optical scanning of the particular customer's feet with foot scanner 100, information is transferred to a central storage facility for a particular retail footwear store 102. Subsequently, such information is electronically transferred to a centralized database 104 by way of one of several communication methods including a computerized network transfer, serial data

112 which can produce a unique last for the customer. After producing the unique last for the customer, the last can be transferred to the footwear manufacturing facilities 114 so that custom footwear and footwear products can be manufactured for the customer. In the preferred embodiment, the manufactured footwear and footwear products can then be sent to the retail footwear store 102 for delivery to the customer. The unique last may also be transferred to the retail footwear store for storage at the retail footwear store or delivery to the customer so that the customer can save the last for subsequent manufacturing of custom footwear and footwear products.

Centralized footwear database 104 also has links to a mechanism which can perform statistical trend analysis 106 for determining such information as may be desired. Some of the statistical trend analysis may include particular styles or sizes of styles which are requested frequently by customers as well as which lasts are the best lasts to store for subsequent use in manufacturing products for other customers. Thus, by providing improved statistical analysis of actual feet, it is possible to more efficiently "nest" the last production itself. For example, such "nesting" may occur due to phenomenon such as gender, occupation, geography, ethnic background, or other diverse characteristics. In addition, the statistical analysis mechanism 106 can transfer the information to quality and inventory control mechanisms 108 so that improvements in the styles and sizes of existing lasts used in mass production of footwear can be made if desirable by modifying the information stored in the existing last database 116. Substantial last and footwear inventory reductions are possibly utilizing this improved method of last inventory management.

Referring now more particularly to Figure 2, a block diagram showing the preferred embodiment of the

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configured in several forms including combination of tape drives, hard disk drives, floppy disk drives, optical disk drives, static ram or other electronic storage devices. It will be appreciated by those skilled in the art that the particular storage device used will be highly dependent upon the performance characteristics desired for use in the particular environment in which the foot scanner unit is to be utilized. In the preferred embodiment, a hard disk drive is utilized for local storage of information.

A scanner unit 134 is coupled to central computer 120. The scanner unit 134, as will be further detailed in Figure 3A, provides a three-dimensional, topographical electronic image of a foot which has been scanned. In other words, the scanner unit 134 provides precision contour mapping of bottom surfaces and substantially bottom facing surfaces of a scanned foot. Particular topographical information concerning a particular foot may be derived by determining the intensity of lightness and darkness of portions of the scanned foot image with respect to other portions of the scanned foot image. In particular, image portions which are generally lighter in color or intensity are designated as being closer to the scanner unit than portions of the foot which are darker in color or intensity. Further, parts of the foot which actually touch the surface of the electro-optical scanner 134 are all the same distance from the surface of the scanner; however, the color of the scanned foot still varies. For example, the color of the surface of the foot pressed against the surface of the scanner 134 may vary according to the amount of pressure applied to the surface of the scanner unit in direct correlation to the amount of blood flowing through the foot surface at that particular point. In this case, foot surfaces under extreme pressure will be lighter in color hue than foot surfaces under less pressure which will be generally

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120 preferably includes several optimized elements for manipulating and interfacing with externally coupled devices. Central computer 120 is generally operated through a central processing unit (CPU) 142 which is logically coupled to a central bus 140. Bus 140 passes data between all of the elements of central computer 120. By way of bus 140, CPU 142 communicates with a scanner basic input/output system (BIOS) 144 which is in turn coupled through bus 140 to a small computer system interface (SCSI) 150 operatively interconnected to the scanner. BIOS 144 provides instructions to the scanner during the scanning process and helps control the flow of information to and from the scanner.

CPU 142 further communicates through bus 140 to video controller 146 which is operatively interconnected to the display or monitor. Video controller 146 generates display screens compatible with the monitor from information provided by CPU 142. Such information may include an electronically enhanced scanned image of a customer's foot, footwear catalog information, pricing, and retail footwear store inventory.

The electronically enhanced scanned image preferably is displayed in a plurality of colors or shades of a single color. Preferably, those portions of the scanned foot image which have been determined to be closest to the scanner 134 surface by central computer 120 are assigned the colors of lightest hue or shades of a single color of highest intensity. In addition, the portions of the foot surface deemed to be furthest away from the scanner 134 surface by central computer 120 are assigned colors of darker hues or shades of a single color which are darker in light intensity than those assigned to portions of the foot which wer deemed closer to the scanner 134 surface by central computer 120. It will be appreciated by those skilled in the art that the shades of a color or a plurality of colors may

provide information to CPU 142. In addition, serial input/output (I/O) device 148 is operatively interconnected to remotely located inventory data 124 via a local area network, modem or other form of serial communication.

The remotely located inventory data 124 may be stored within centralized database 104. CPU 142 is operatively interconnected through bus 140 to specialized micro-chip controllers which improve the performance of central computer 120 by reducing the demands on CPU 142. These specialized chips include a math co-microprocessor 156 and direct memory access (DMA) controller 154. Math co-microprocessor 156 alleviates much of the computational demand placed on CPU 142 for the graphic intensive operations of central computer 120 thereby allowing CPU 142 to work on other tasks more efficiently. DMA controller 154 also alleviates part of the data manipulation load placed on CPU 142 by controlling data access to relatively slow data storage devices such as the storage devices connected to hard disk controller 158 and data being received from serial I/O device 148 as well as SCSI controller 150.

In an alternative embodiment, a parallel input/output device controller 152 is included in central computer 120 for controlling communications through bus 140 to CPU 142 which are from a printer or other external device using a parallel input/output interface.

Referring now more particularly to Figure 3A which shows a detailed depiction of the elements of a preferred embodiment electro-optical foot scanner 134 includes an optical scan head 160 which moves along a fixed track 162 during the scan process. Scanner 134 also includes a control unit 164 which adjusts the light intensity of the optical scan head 160, the speed at

Referring now to Figures 4A, 4B, and 4C, these figures encompass a flowchart of an example showing the use of the preferred electro-optical foot scanner unit, shown in Figure 2. The flowchart diagram is an example of using electro-optical foot scanner unit from a user's point of view by depicting graphical and textual information which may be shown to a user. This information preferably is shown to a user on a video display screen for review and/or for providing continued navigation through a series of display screens.

Referring now more particularly to Figure 4A, by starting at the open menu/screen display 200 (shown in Figure 6) a user is given a choice to select from a plurality of options including an option to go to a scan foot menu/screen display 202. Upon selecting with an input device 126 (hereinafter referred to as selecting) either scan left foot or scan right foot options from open menu/display screen 200, a scan foot menu/screen display 202 such as the one shown in Figure 7 is presented on the display 122. At this point a user may choose to select scanning of foot which is bare, which has a light sock, or which has a dark sock. After selecting a foot scanning option, a foot is scanned by scanner 134. As the foot is scanned, the information is processed by central computer 120 and the scanned foot image 204 is displayed on display 122. Preferably, as the scanner scans through the length of a particular foot proximate scanner 134, display screen 204 (not shown) displays the portion of the particular foot which has already been scanned. By displaying the image of the scanned foot or screen display 204 as scanner 134 scans the particular foot, a user will focus their attention on the scanned image rather than the length of time that it actually takes to scan the foot, thereby causing the scanning of the foot to be relatively quick from a user's point of view. After scanning and displaying the scanned foot image, open menu/screen

data module, quick fit module, style fit module. If a user chooses to correct volume information, menu/screen display 208 is presented on display 122 for the particular foot selected.

Upon selecting the complete data module, select name option menu/screen display 212, shown in Figure 11, is presented on display 122. Upon selecting to attach the foot scan image information to a file, menu/screen display 214, shown in Figure 12, is presented on display 122. A user selects one of five available current customer files to save the customer information under. Upon selecting a particular current customer file to save the scanned foot image information under which automatically assigns new input to a storage file in storage device 130, menu/screen display 216, shown in Figure 13, is presented on screen display 122. The display screen keyboard prompts the user to input a customer name, address, phone number and age by selecting the characters on menu/screen display 13. After completing this information, menu/screen display 218, shown in Figure 14, is presented on screen display 122. After selecting the appropriate customer sex, menu/screen display 220, shown in Figure 15, is presented on display 122. After selecting the particular footwear fit pressure preference, menu/screen display 222, shown in Figure 16, is presented on screen display 122. After selecting the customer sock thickness preference, menu/screen display 224, shown in Figure 17, is presented on display 122. After selecting the particular footwear category which the customer desires to be fitted to, menu/screen display 226, shown in Figure 18, is presented on display 122. After selecting the particular occupation which the customer plans to use the particular footwear for, menu/screen display 228, shown in Figure 19, is presented on display 122. After selecting the particular environmental condition in which the footwear would most frequently be

menu/screen display 240, shown in Figure 25, is presented on display 122 wherein the user is prompted to either select another person for which to find footwear and automatically returns to menu/screen display 236 or selects to continue operation by running the footwear selection module. Upon choosing to run the footwear selection module, menu/screen display 242, shown in Figure 26, is presented on display 122. Alternatively, if central computer 120 determines that a foot of unusual dimensions has been scanned, the user is presented with menu/screen display 241, shown in Figure 26A, which asks the user to branch directly to the fitting specifications menu/screen display 246, shown in Figure 30, before recommending footwear for the customer.

A priority assignment and sorting algorithm is used to select footwear models and sizes that match the use categories previously selected by the user. The first seven footwear styles selected by the algorithm are presented on menu/screen display 243, shown in Figure 27. The items automatically checked for availability in inventory and those which are available are preferably shown in darker (more definite) characters. Similarly, those which are not available in current inventory are preferably displayed in a lighter (less definite) characters. After selecting to view the remaining suggested footwear, menu/screen display 244, shown in Figure 28, is presented on display 122. The user is asked to select whether or not adjustment to the fitting specifications is necessary. If such adjustments to the fitting specifications are indicated by the user, menu/screen display 246, shown in Figure 30, is presented on display 122. Within menu/screen display 246, indicators 249 are shown next to particular information categories which central computer 120 has calculated most likely to require adjustment to allow more precise fitting of a customer's foot. Thus, a

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indicating a desire to branch to fit/scan control, central computer 120 branches to menu/screen display 200, shown in Figure 6, and continues normal operation from that point. Alternatively, upon indicating a desire to review the footwear product catalog, menu/screen display 260, as shown in Figure 38, is presented on display 122 and central computer 120 continues normal operation from that point in the flow diagram shown on Figure 4C. Alternatively, upon indicating a desire to view last overlay, menu/screen display 272, shown in Figure 44, is presented on display 122 and normal operation of central computer 120 is continued as shown in the flow diagram shown in Figure 4C. Alternatively, upon indicating a desire to branch to the fit aid recommendations module, menu/screen display 282, shown in Figure 49, is presented on display 122 and central computer 120 continues normal operation from that point as shown in program flow diagram Figure 4A.

Alternatively, from menu/screen display 210, shown in Figure 10, a user may choose to enter the quick fit module. The quick fit program module is designed to work with only scan data and without customer information. After choosing to enter the quick fit module, menu/screen display 234, shown in Figure 22, is presented on display 122. Menu/screen display 234 indicates that central computer 120 is loading footwear information into memory. After accomplishing the loading of such information, menu/screen display 238, shown in Figure 24, is presented on display 122. After selecting the sex of the quick fit customer, screen display 240 is presented on display 122 and central computer 120 continues on in the program flow as indicated in Figure 4B and as previously detailed in the discussion of the complete data module.

Alternatively, as shown in menu/screen display 210, shown in Figure 10, the user may select to enter

Figure 6, or fit another footwear style to the particular foot currently selected.

Alternatively, as shown in menu/screen display 210, shown in Figure 10, the user may select to enter the catalog module. Upon selecting to enter the catalog module, menu/screen display 260, shown in Figure 38, is presented on display 122. Through menu/screen display 260, a user may browse through the current catalog listings of footwear according to different styles without having previously selected customer information to be used in conjunction with selecting a particular style. The styles available may be presented on display 122 in textual menus as shown in menu/screen display 260. Alternatively, the styles may be shown in graphical depictions of particular styles of shoes available such as hiking boots, running shoes, service shoes, work boots, etc. For example, a user may choose to view shoes from page 3, as shown in menu/screen 262, shown in Figure 39. The list of particular footwear may be shown in a textual or graphical manner as discussed above. Such that miniature graphical representatives of footwear may be shown in place of the textual listing of the name of the footwear. After viewing the list of particular footwear listed on catalog page 3, a user may choose to view a particular piece of footwear. Upon choosing a particular piece of footwear, menu/screen display 264, shown in Figure 40, is presented on display 122. Information about the particular footwear selected is presented to the user including sizes and widths available according to the Brannock sizing system and particular features of this particular footwear. A user may choose to return to the same or different pages of the catalog or to the main menu catalog screen 260, shown in Figure 38. Alternatively, a user may choose to more closely view the particular footwear selected. In the preferred embodiment, menu/screen display 264 includes miniature pictures of the side 263, top 263'

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continues normal operation from that point as shown in the program flow diagram Figure 4C.

Alternatively, a hidden option on menu/screen display 200, shown in Figure 6, is available. Upon activation of the hidden menu option in menu/screen display 200, central computer 120 operates interactively with remotely stored inventory data 124 as shown in Figure 4C. Upon selection of the hidden option, menu/screen display 330, shown in Figure 65, is presented on display 122. The user is prompted to update inventory information. Upon choosing the first updating step, including polling a remotely located computer including inventory data 124, menu/screen display 332, shown in Figure 66, is presented on display 122 while central computer 120 receives information from remotely located inventory data 124. After receiving the inventory data 124, menu/screen display 330 is presented on display 122. Upon selecting the second updating step of updating quick access files, menu/screen display 334, shown in Figure 67, is presented on display 122. After updating the quick access files, menu/screen display 330 is presented on display 122. Preferably, the user chooses to return to main open menu/screen display 200, shown in Figure 6, and central computer 120 continues on in the program flow as indicated in Figure 4A.

Alternatively, from open menu/screen display 200, shown in Figure 6, or through branch point 310, the fit aids module may be entered. Upon entering the fit aids module, menu/screen display 282, shown in Figure 49, is presented on display 122. If a customer file has not been previously selected, menu/screen display 284, shown in Figure 50, is presented on display 122 so that a user may select a particular customer for which to suggest fit aids. The user may choose to enter a current customer number, return to open main menu/screen 200, or retrieve customer information from storage

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may generate a hard copy on printer 128 of the suggested fit aids, draw a picture of the particular suggested fit aids or branch to an alternative branch point menu. Upon choosing to display suggested fit aids for the particular customer, a menu/screen display 292, like the one shown in Figure 54, is presented on display 122. In menu/screen display 292, only the suggested fit aids for the particular selected customer foot image file are shown. For instance, in the example shown, the suggested fit aids include a Red Wing insole, heel cup, heel cushion, metatarsal support and volume adjust shim. After viewing the suggested fit aids for the selected customer fit image file, menu/screen display 290 is redisplayed.

Upon choosing to go to a return menu, branch point menu/screen display 294, shown in Figure 55, is presented on display 122. From the branch point menu/screen display 294, the user may choose to return to the beginning of the fit aid module through branch point 310 and choose fit aids for the next customer. Alternatively, a user may choose to adjust the fitting specifications through the use of menu/screen display 295, shown in Figure 56, which functions in a similar manner to the adjust fitting specification operation described for menu/screen displays 246 and 247, shown in Figures 30 and 31, respectively. Alternatively, a user may choose to select a particular style of footwear by branching to the style fit module through branch point 312. Alternatively, a user may choose to view the footwear catalog by branching through branch point 306 to the catalog module. Alternatively, a user may choose to return to the fit aid recommendations menu/screen display 290 and continue program operation through central computer 120.

Alternatively, from open menu/screen display 200, shown in Figure 6, a user may choose to enter the file locator module. Upon entering the file locator

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menu/screen display 320, a user may choose to view the particular ski boot by selecting the computer graphic image of the ski boot. After selecting the computer graphic image of the ski boot, menu/screen display 328, as shown in Figure 64, is presented on display 122. After viewing the ski boot image, the user returns to menu/screen display 320.

In addition, the user may choose to view an alternative last overlay tailored for footwear having sidewall liners, or liners and an outer shell. After choosing to view this alternative last overlay, menu/screen display 322, shown in Figure 61, is presented on display 122. The user may select a particular boot internal perimeter outline (BIPO) to overlay the scanned foot image currently selected by selecting a particular BIPO size. After selecting the particular BIPO size to overlay on the image 323 of the scanned foot currently selected, menu/screen display 324, shown in Figure 62, is presented on display 122. As shown in menu/screen display 324, a double-lined boot image 325 (also referred to as a liner region image) is overlaid on a scanned foot image. By manipulating menu options 321, the double-lined boot image outline 325 may be moved with respect to the foot image. After placing the boot image 325 precisely, a user may choose to show the particular pressure points between the boot and scanned foot image. Upon choosing to view the pressure points, menu/screen 326, as shown in Figure 63, is presented on display 122. Menu/screen display 326 displays a filled boot outline image 327 between the two-lined image 325 shown in menu/screen display 324. In addition, portions of the foot image 323 which are between the inner (the line generally nearer the foot image) and outer lines (the line generally further from the foot image) of the filled boot image 257 are highlighted so that a user may discern the amount of

WHAT IS CLAIMED IS:

1. An integrated system for footwear visual image cataloging and selection, comprising:

a) foot measuring means for electronically measuring a customer's foot;

b) data processing means logically coupled to the foot measuring means for receiving foot measurement data, customer identification data, and customer preference data;

c) storage means logically coupled to the data processing means for storing a footwear catalog comprising footwear images and footwear related data in a manner which allows rapid selection and retrieval by the customer;

d) visual display means for displaying images and data relating to the measured foot, suggested footwear images, and suggested footwear related data stored in the footwear catalog, the suggested footwear images and footwear related data being automatically selected by matching the customer preference data and foot measurement data to footwear related data in the footwear catalog.

2. The system according to claim 1 wherein the foot measuring means comprises an electro-optical scanning mechanism.

3. The system according to claim 1 wherein the visual display means comprises a high resolution graphics display.

[illegible] 1 wherein the

a) measuring means for electronically measuring a foot and for providing foot measurement data to a visual display;

b) footwear database means for providing selected footwear data to the visual display;

c) the visual display being logically coupled to the measuring means and to the footwear database means, the visual display comprising means for receiving foot measurement data from the measuring means and for displaying the foot measurement data as a foot image, the visual display further comprising means for receiving selected footwear data from the footwear database means and for displaying a selected footwear image; and

d) input means for providing relative movement between the image of the selected footwear and the measured foot image as displayed on the visual display thereby enabling electronic determination of the actual fit of the selected footwear with the measured foot.

11. An integrated method of footwear visual image cataloging and selection comprising the steps of:

a) measuring a customer's foot to provide foot sizing data suitable for electronic transfer to a data processing device;

b) inputting customer information and preference data to a data processing device;

c) storing a footwear catalog comprised of images and data related to available footwear, the footwear catalog being stored in a storage device;

d) automatically selecting suggested footwear by matching customer foot sizing data and customer preference data to suitable and available footwear in the stored footwear catalog; and

e) visually displaying images and data relating to the measured foot and suggested footwear.

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different from the color of the foot image not within the liner region image.

FIG. 2

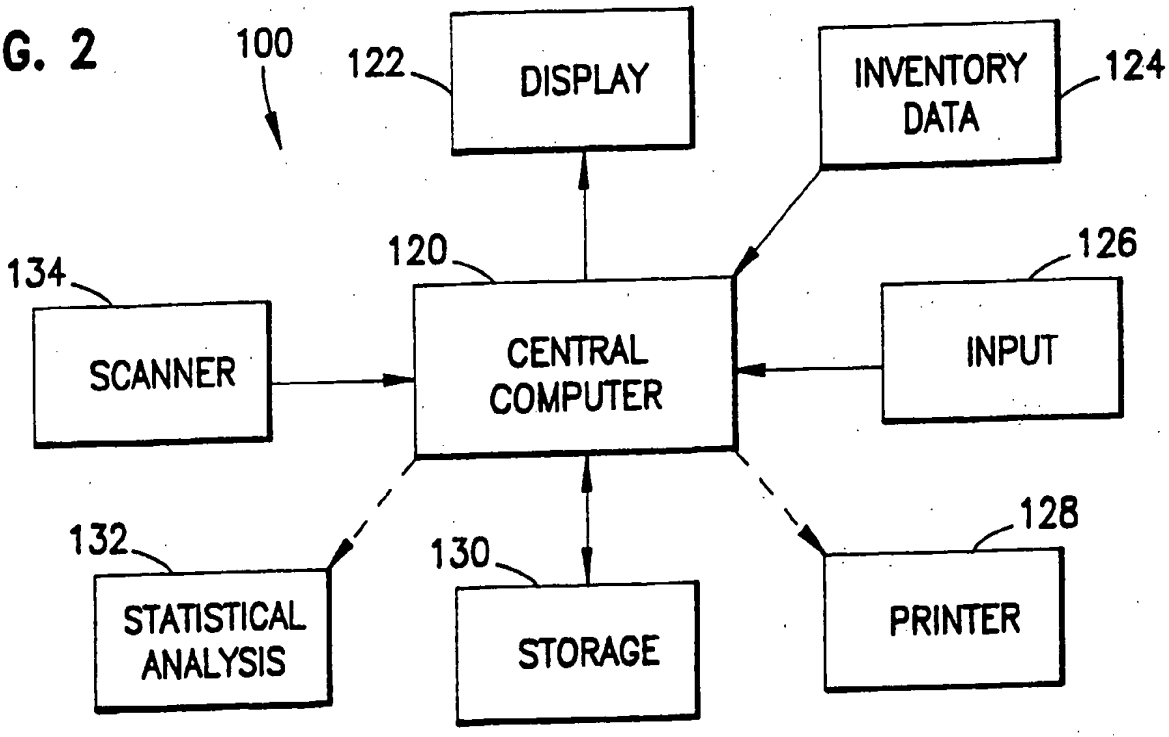

100
122
DISPLAY
INVENTORY DATA
124
120
126
134
SCANNER
CENTRAL COMPUTER
INPUT
132
130
128
STATISTICAL ANALYSIS
STORAGE
PRINTER

FIG. 3

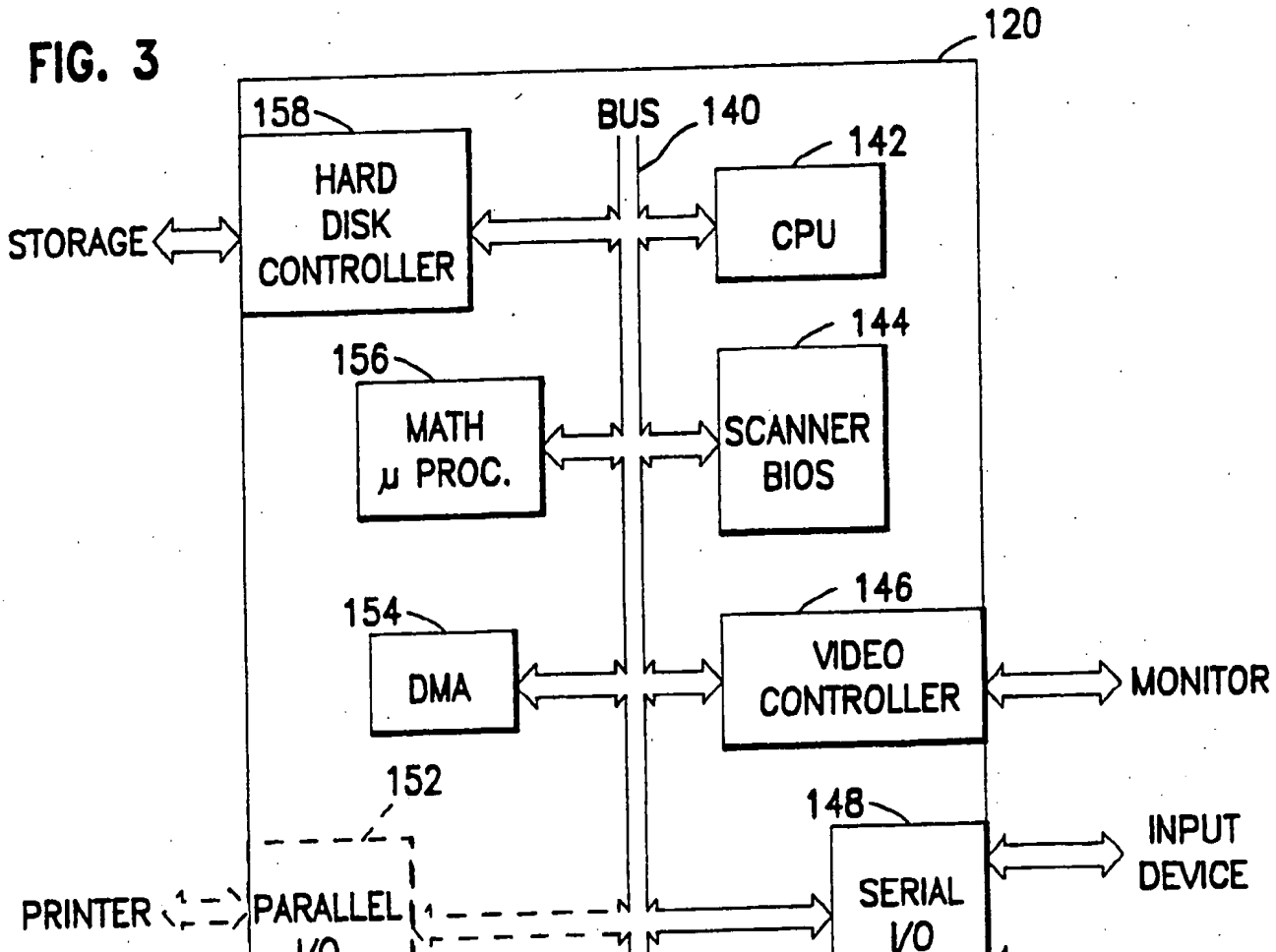
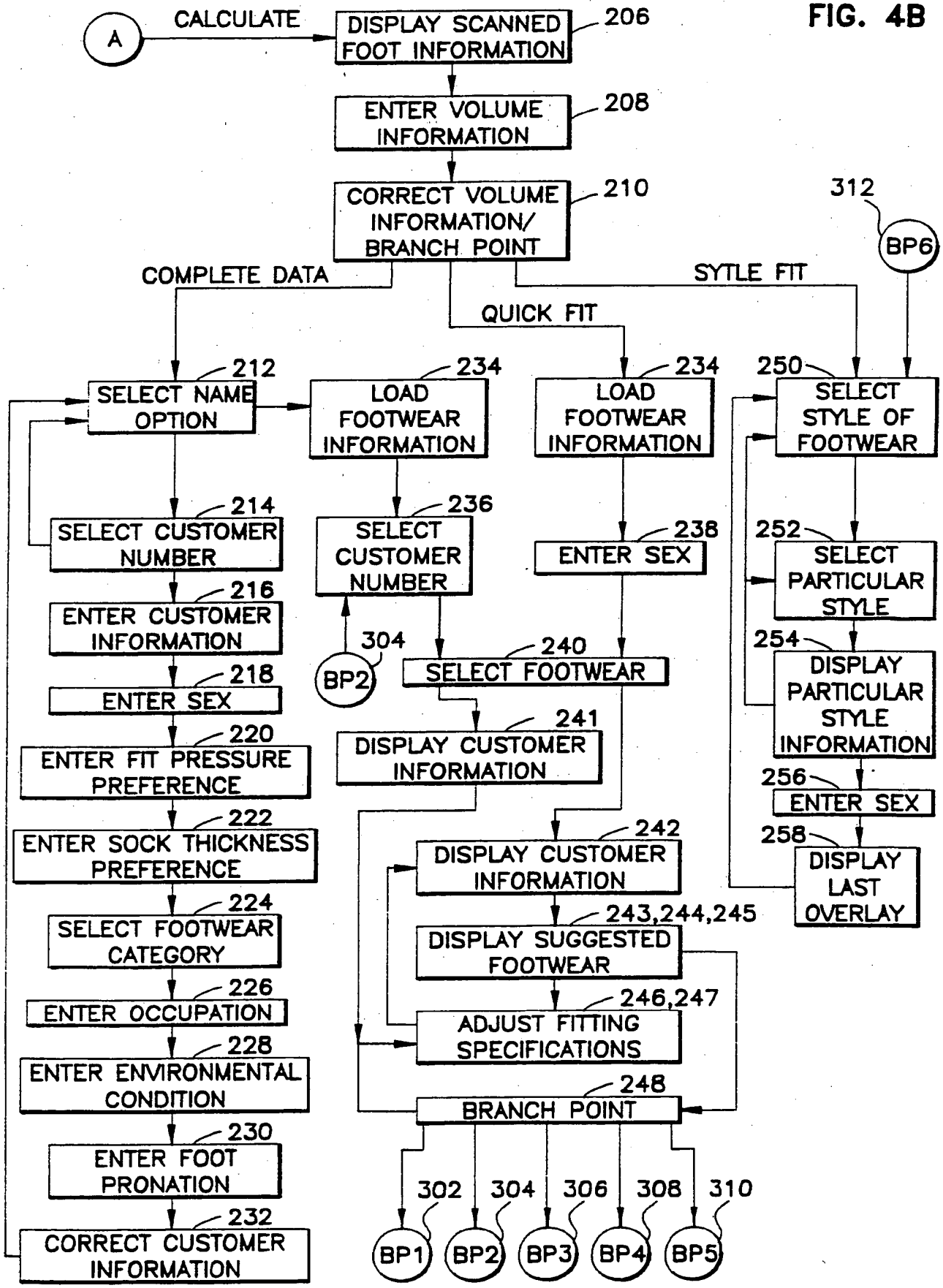

120
158
BUS
140
142
HARD DISK CONTROLLER
STORAGE
CPU
144
156
MATH μ PROC.
SCANNER BIOS
146
154
DMA
VIDEO CONTROLLER
MONITOR
152
148
INPUT DEVICE
PRINTER
PARALLEL
SERIAL I/O

FIG. 4B


A
CALCULATE
DISPLAY SCANNED FOOT INFORMATION
206
ENTER VOLUME INFORMATION
208
CORRECT VOLUME INFORMATION/ BRANCH POINT
210
312
BP6
COMPLETE DATA
QUICK FIT
SYTLE FIT
212
SELECT NAME OPTION
234
LOAD FOOTWEAR INFORMATION
234
LOAD FOOTWEAR INFORMATION
250
SELECT STYLE OF FOOTWEAR
214
SELECT CUSTOMER NUMBER
236
SELECT CUSTOMER NUMBER
238
ENTER SEX
252
SELECT PARTICULAR STYLE
216
ENTER CUSTOMER INFORMATION
304
BP2
240
SELECT FOOTWEAR
254
DISPLAY PARTICULAR STYLE INFORMATION
218
ENTER SEX
241
DISPLAY CUSTOMER INFORMATION
256
ENTER SEX
220
ENTER FIT PRESSURE PREFERENCE
242
DISPLAY CUSTOMER INFORMATION
258
DISPLAY LAST OVERLAY
222
ENTER SOCK THICKNESS PREFERENCE
243,244,245
DISPLAY SUGGESTED FOOTWEAR
224
SELECT FOOTWEAR CATEGORY
246,247
ADJUST FITTING SPECIFICATIONS
226
ENTER OCCUPATION
228
ENTER ENVIRONMENTAL CONDITION
248
BRANCH POINT
230
ENTER FOOT PRONATION
302
304
306
308
310
232
CORRECT CUSTOMER INFORMATION
BP1
BP2
BP3
BP4
BP5

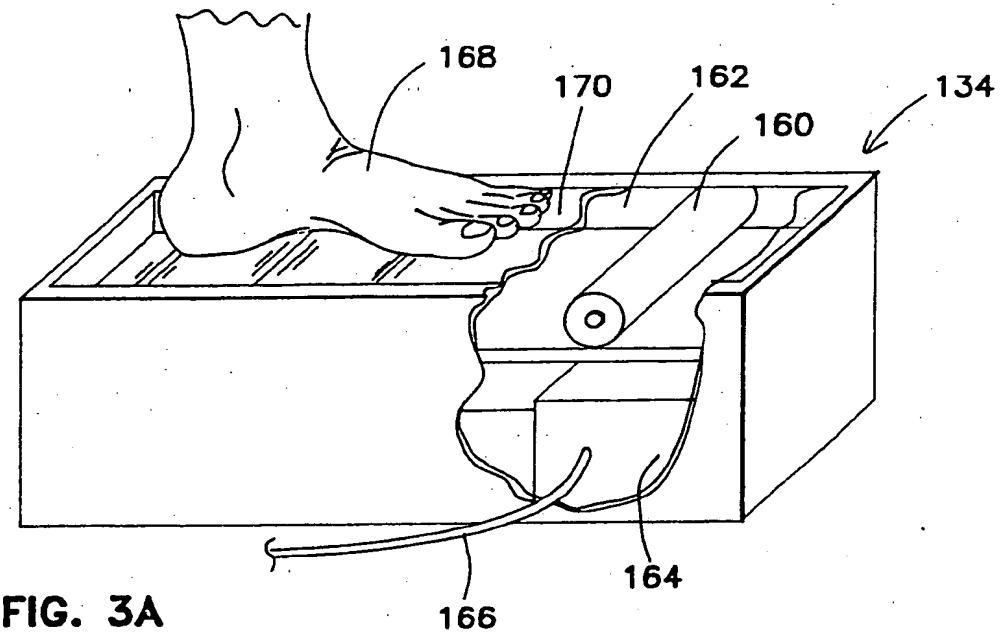


FIG. 3A

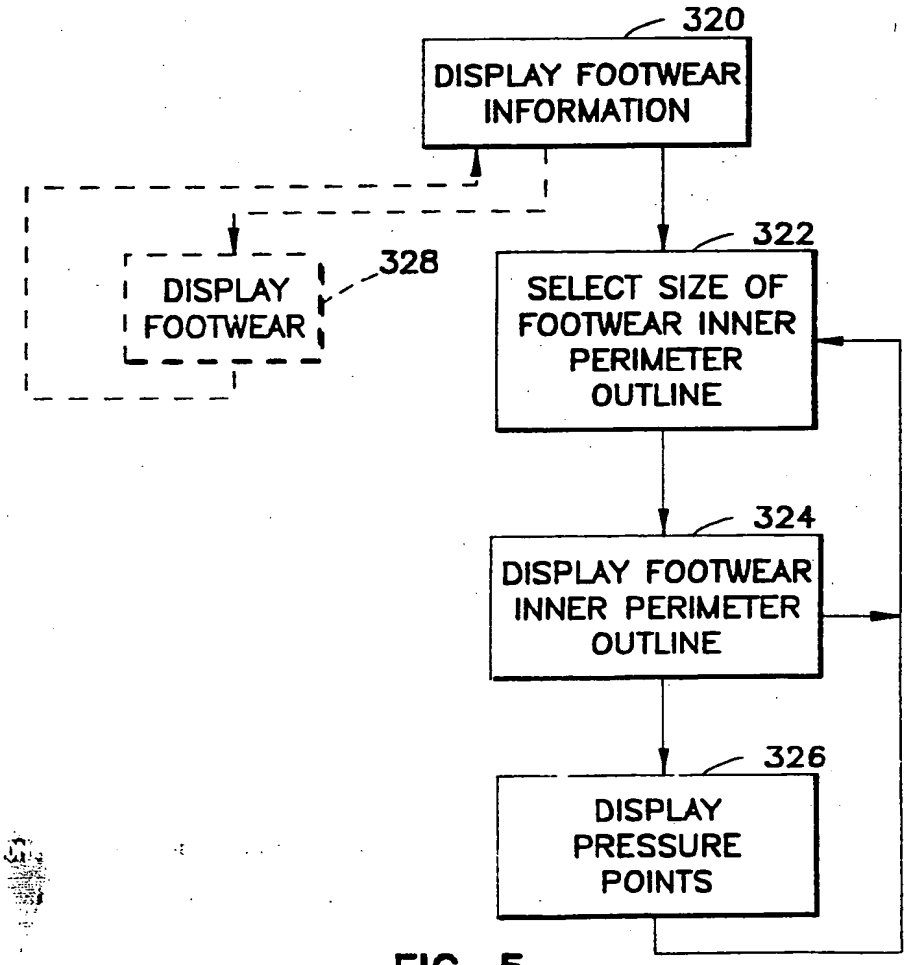


FIG. 5

DOCID: <WO 9117676A1 I >

FIG.8

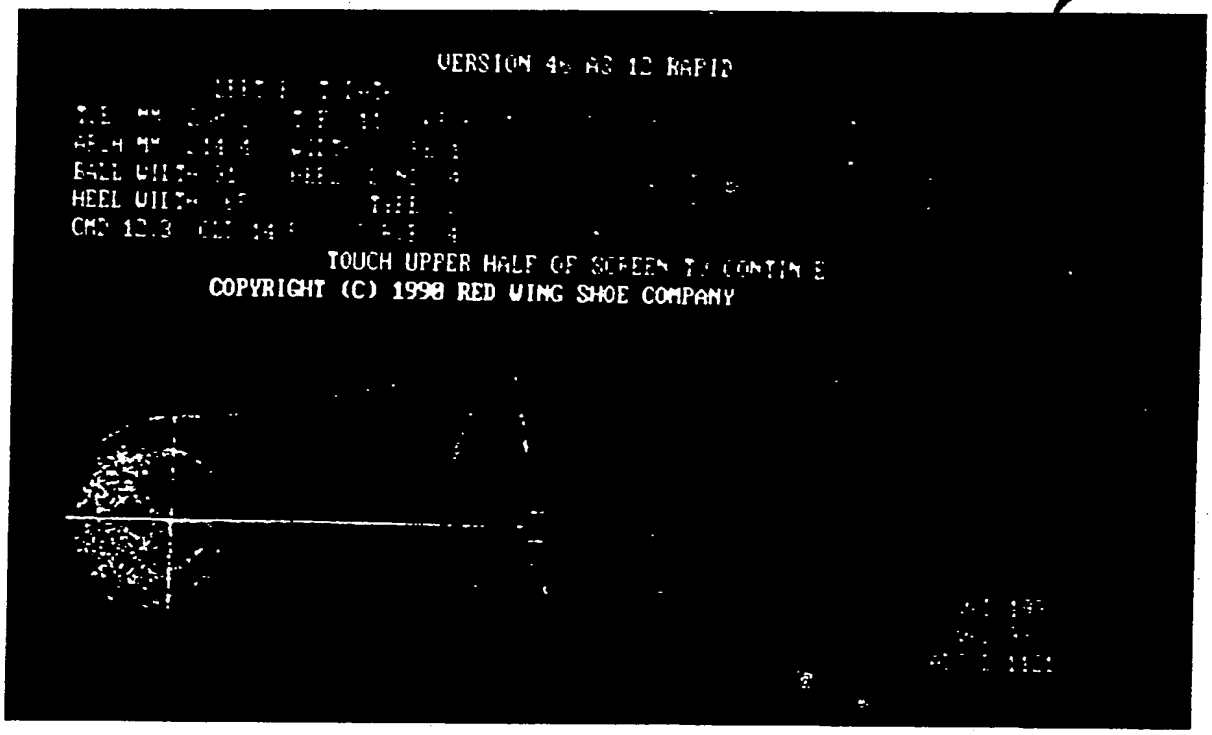
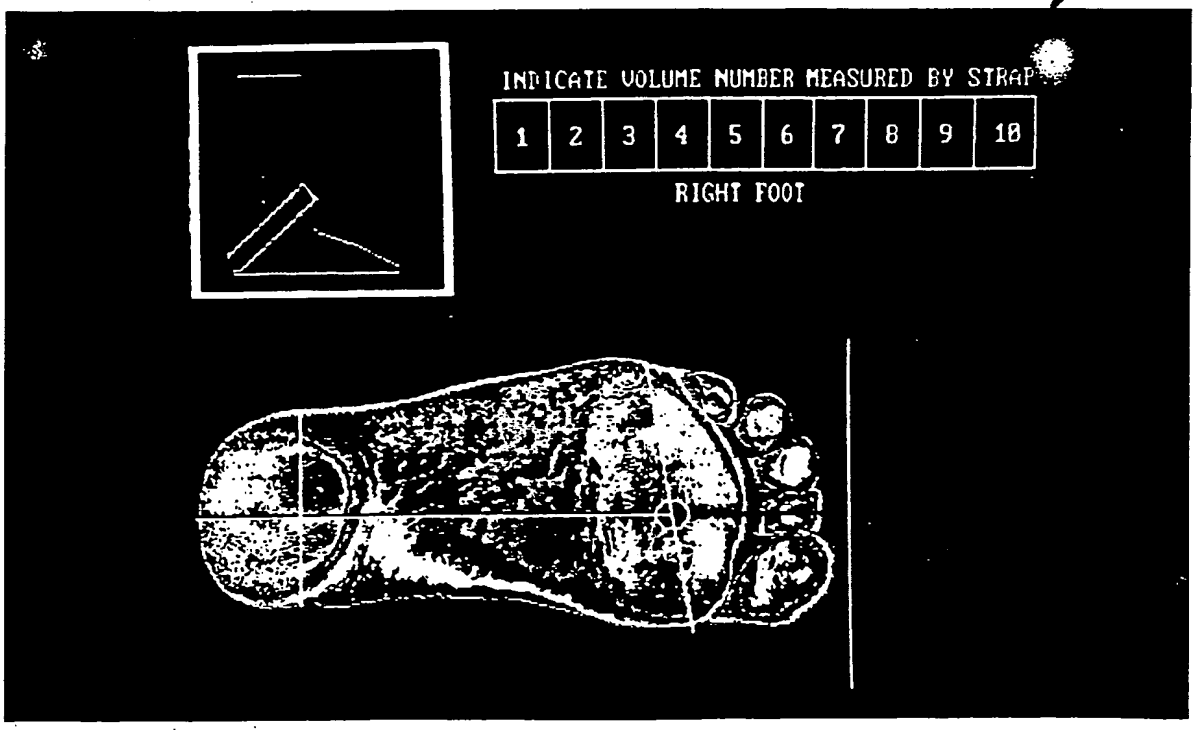


FIG.9



DOCID: <WO___9117676A1_I_>

FIG.12

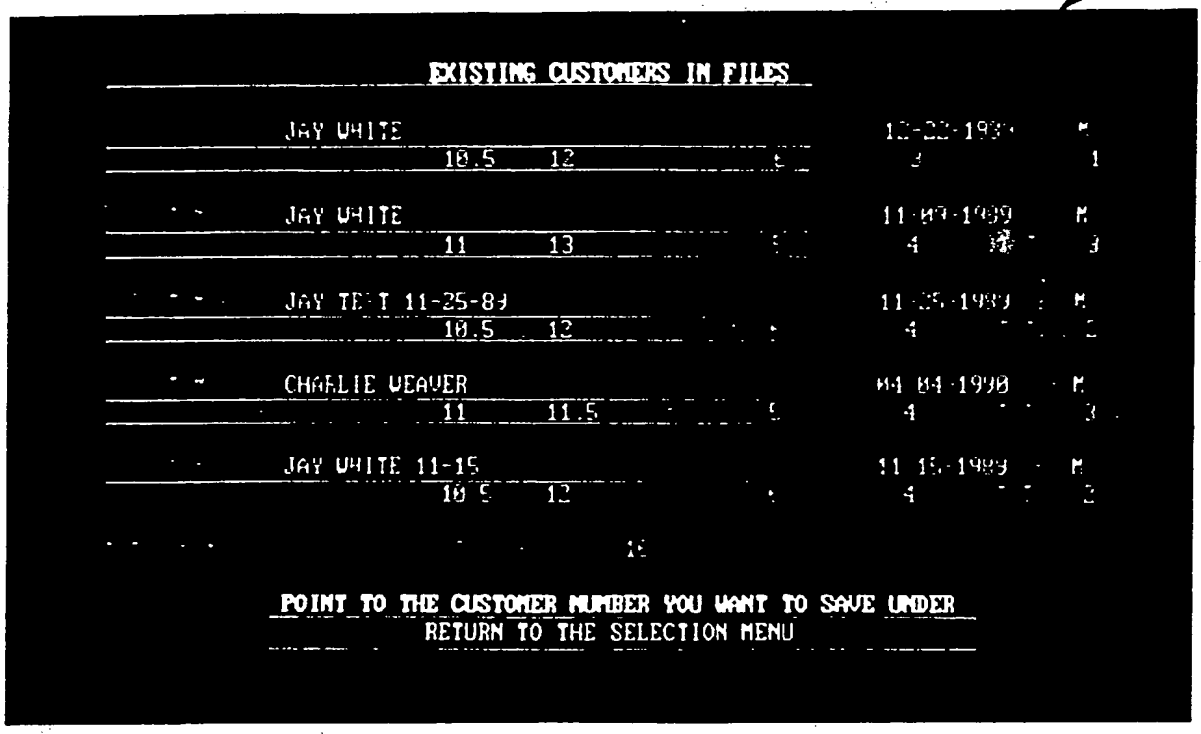
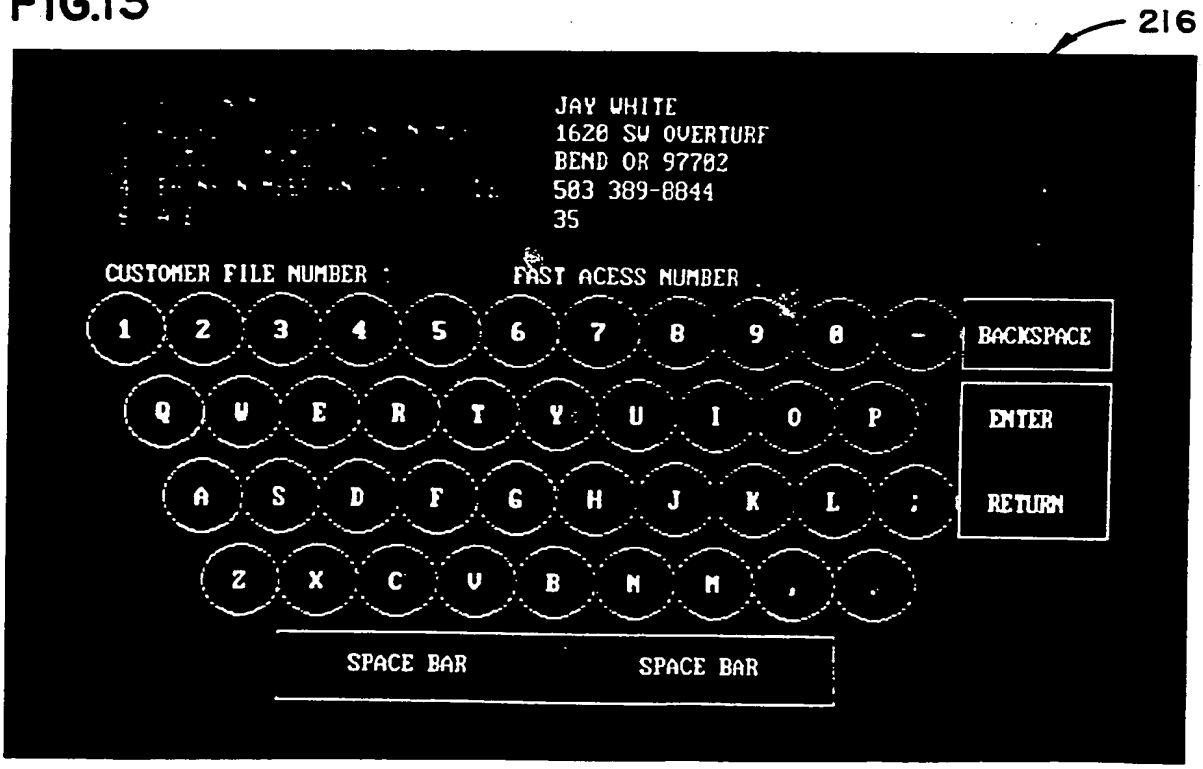


FIG.13



)OCID: <WO___9117676A1_I_>

FIG. 16

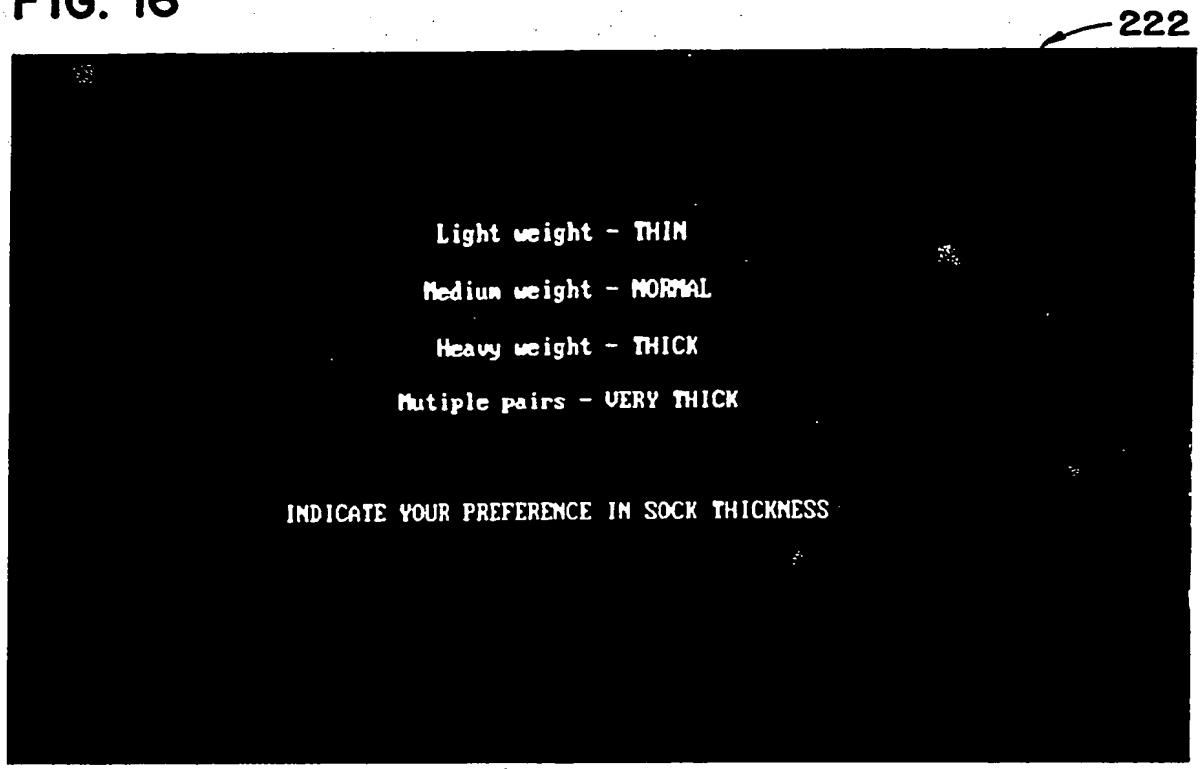


FIG. 17

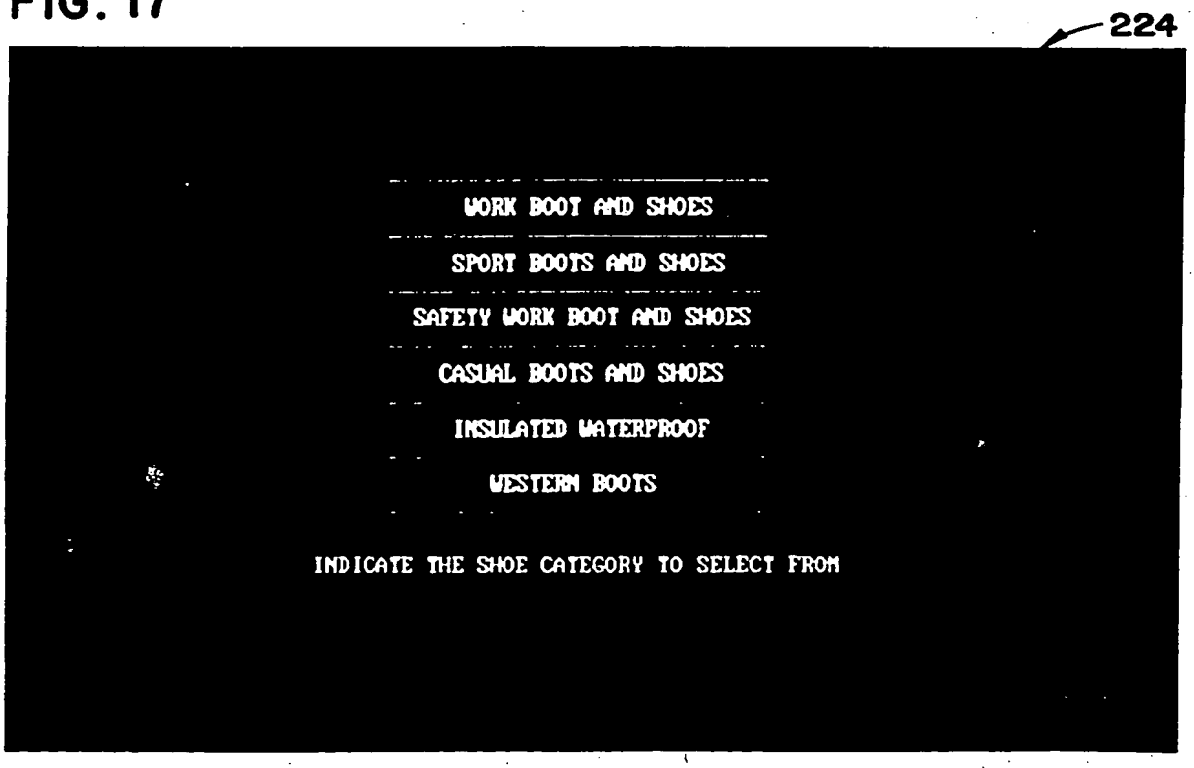


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FIG. 20

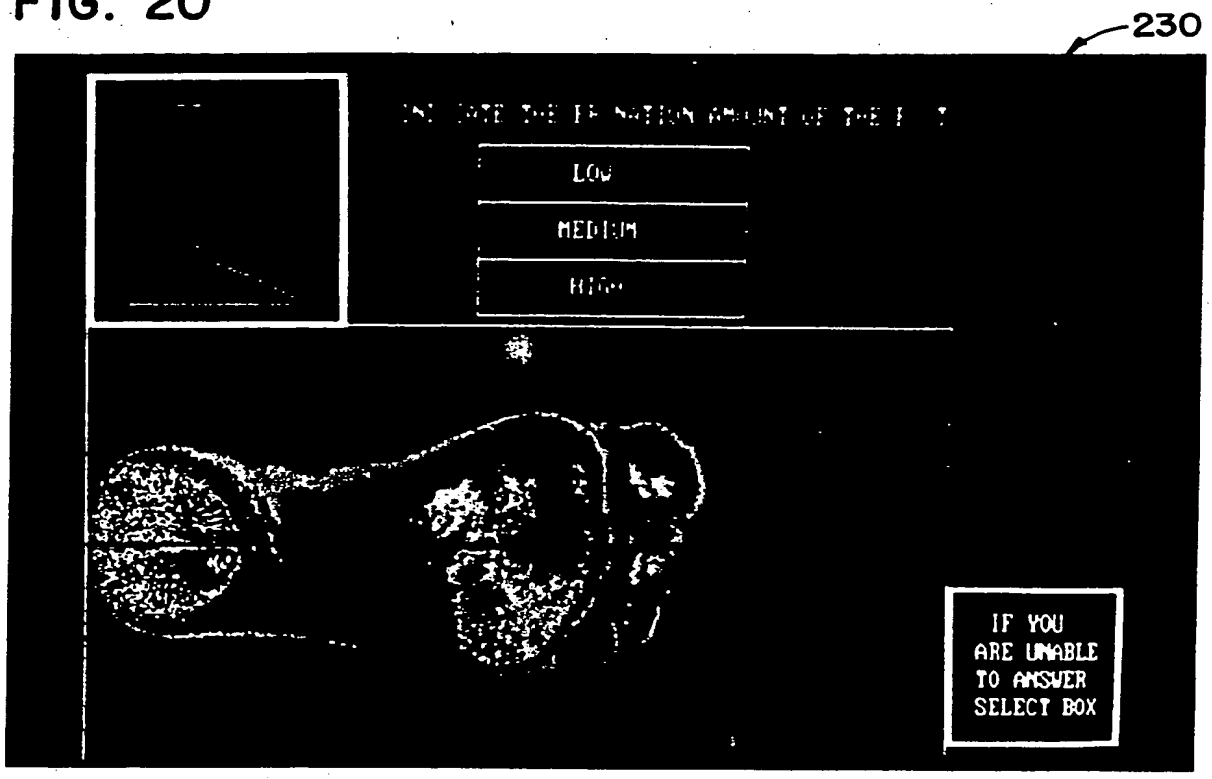
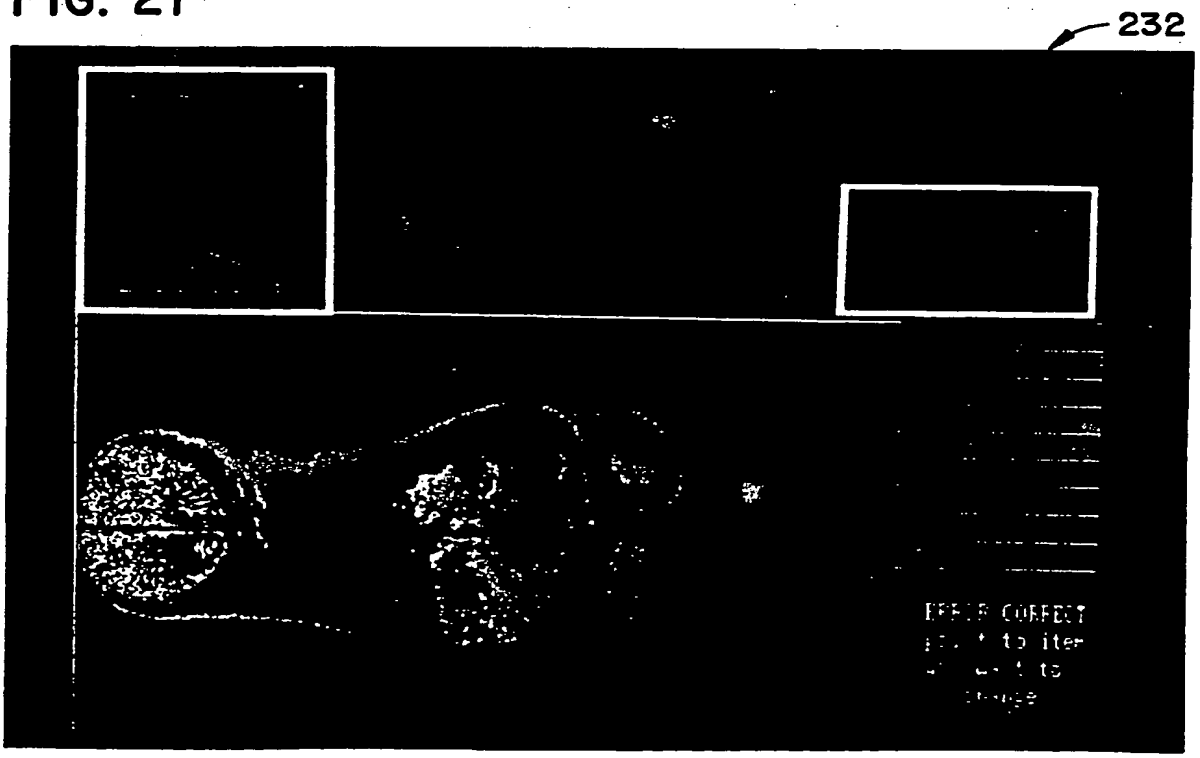


FIG. 21



DOCID: <WO___9117676A1_I_>

FIG.24

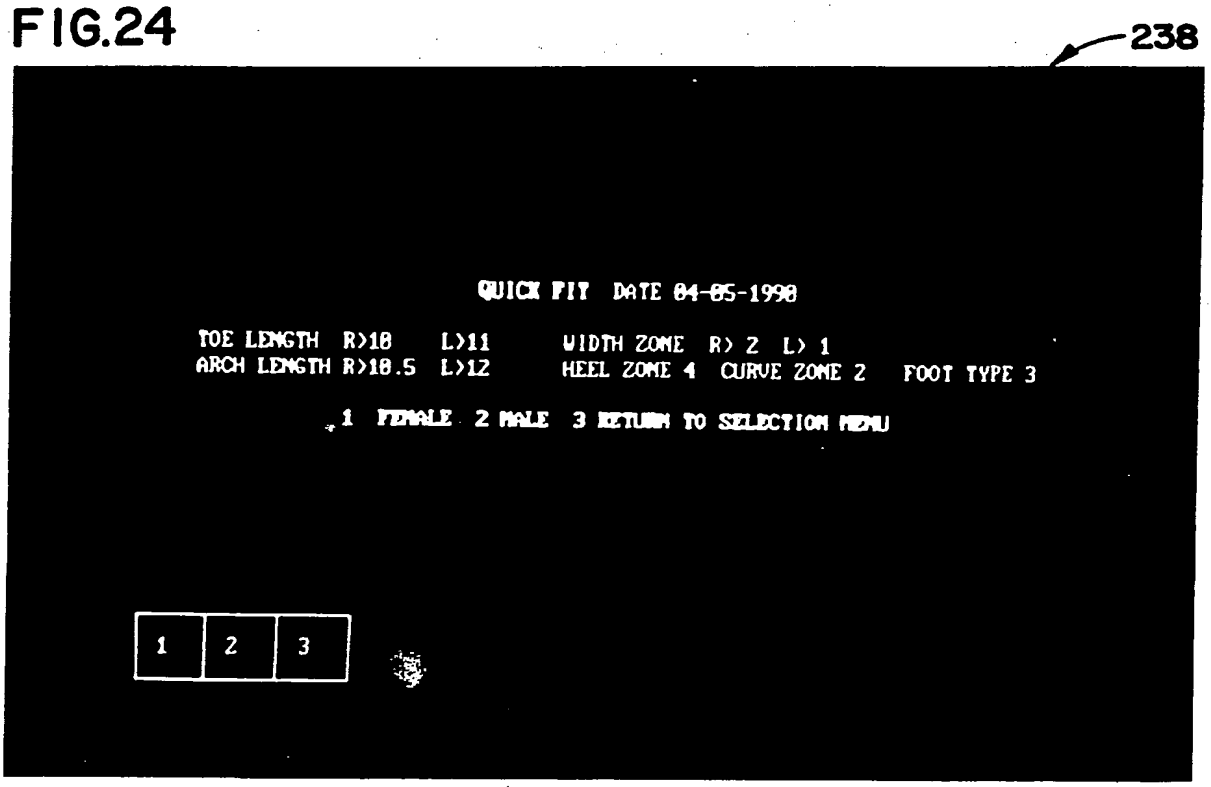
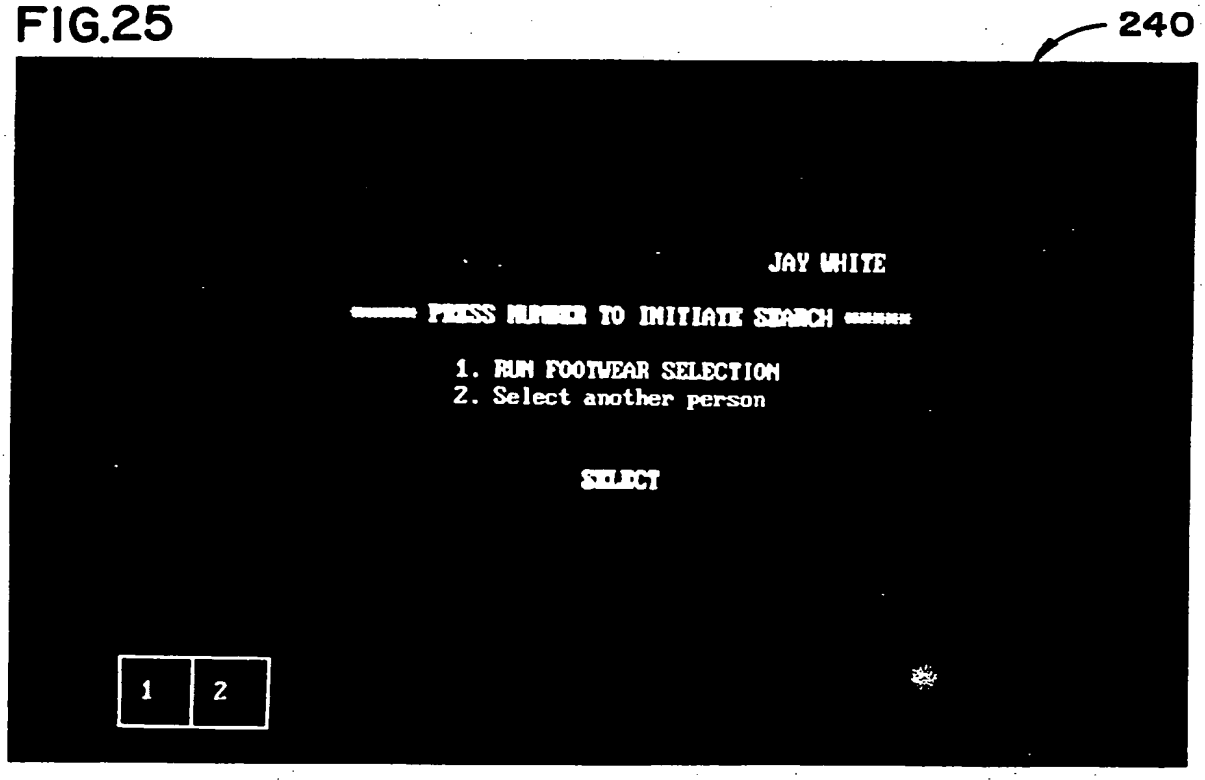


FIG.25



DOCID: <WO 9117676A1_I_>

FIG.27

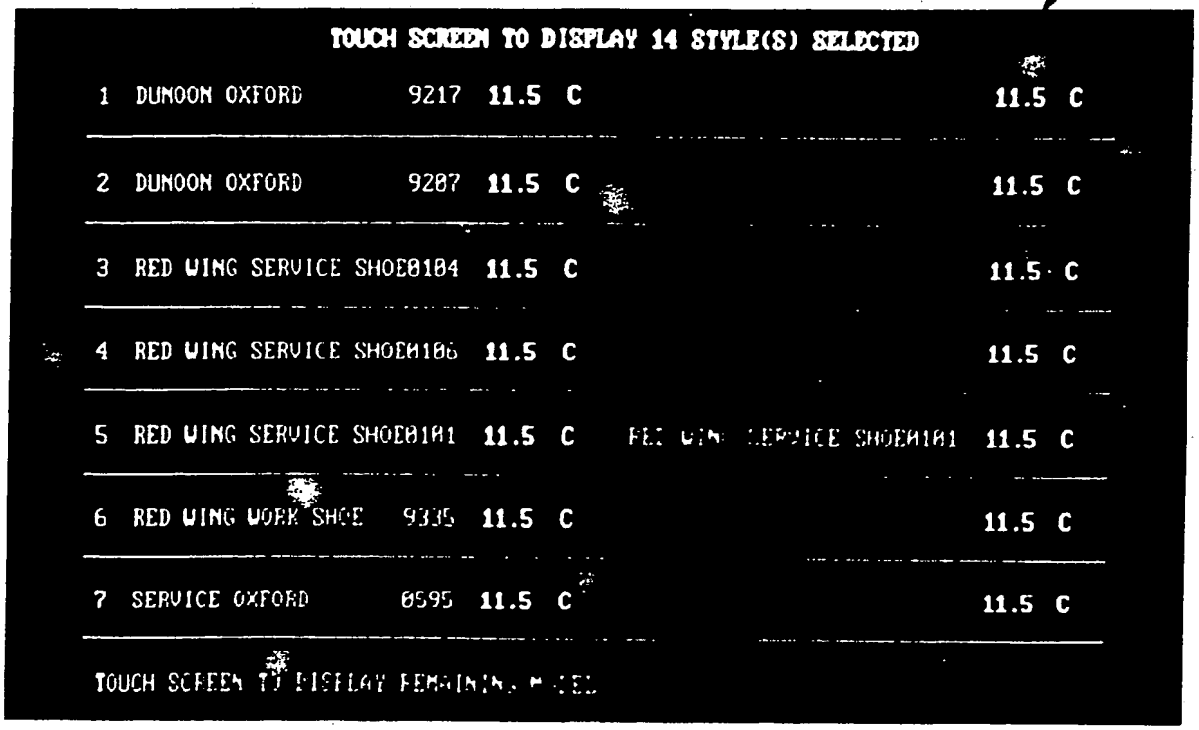


FIG.28

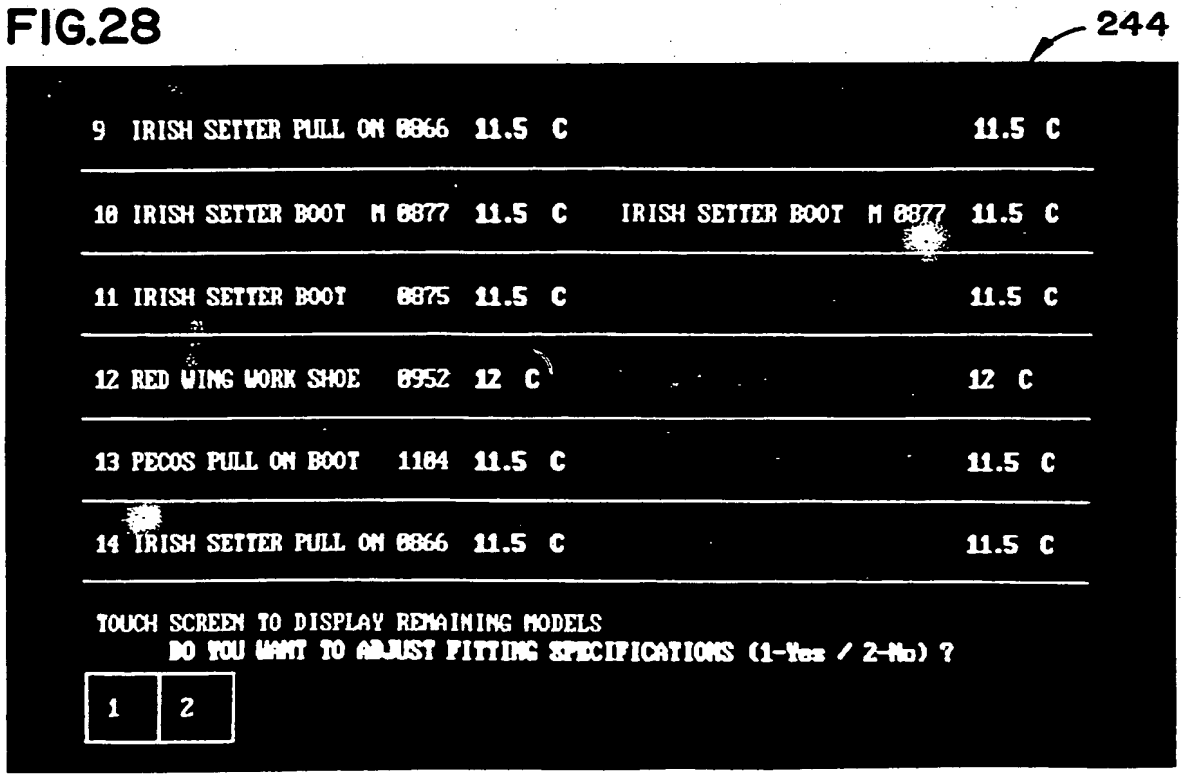


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FIG. 31

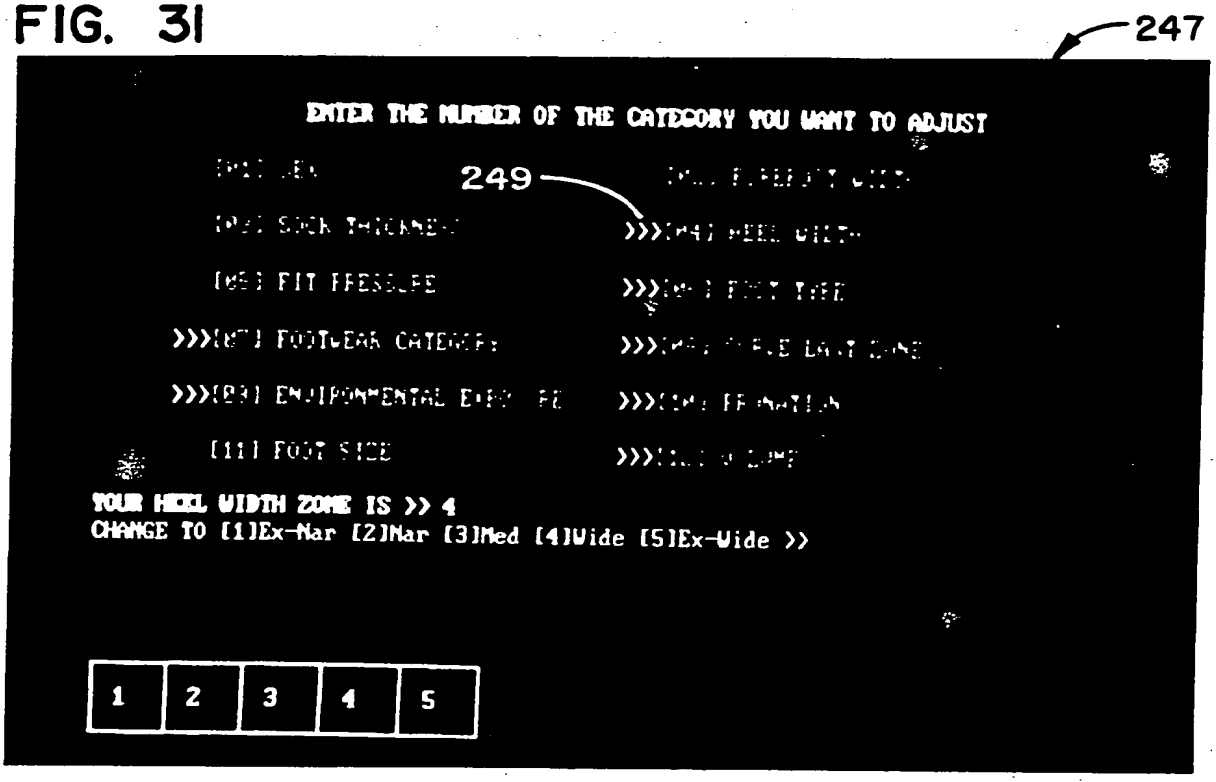
247
ENTER THE NUMBER OF THE CATEGORY YOU WANT TO ADJUST
249
[11] FOOT SIZE
YOUR HEEL WIDTH ZONE IS >> 4
CHANGE TO [1]Ex-Nar [2]Nar [3]Med [4]Wide [5]Ex-Wide >>
1
2
3
4
5

FIG. 32

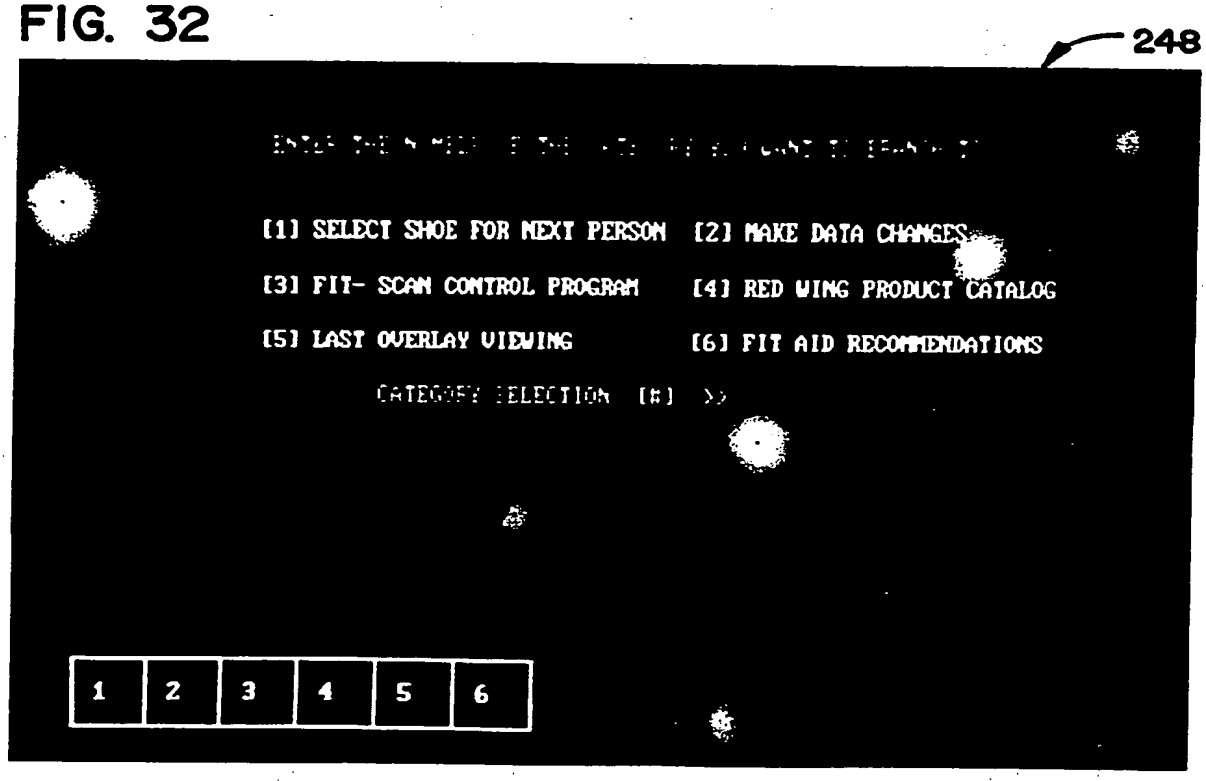
248
[1] SELECT SHOE FOR NEXT PERSON
[2] MAKE DATA CHANGES
[3] FIT- SCAN CONTROL PROGRAM
[4] RED WING PRODUCT CATALOG
[5] LAST OVERLAY VIEWING
[6] FIT AID RECOMMENDATIONS
1
2
3
4
5
6

FIG. 35

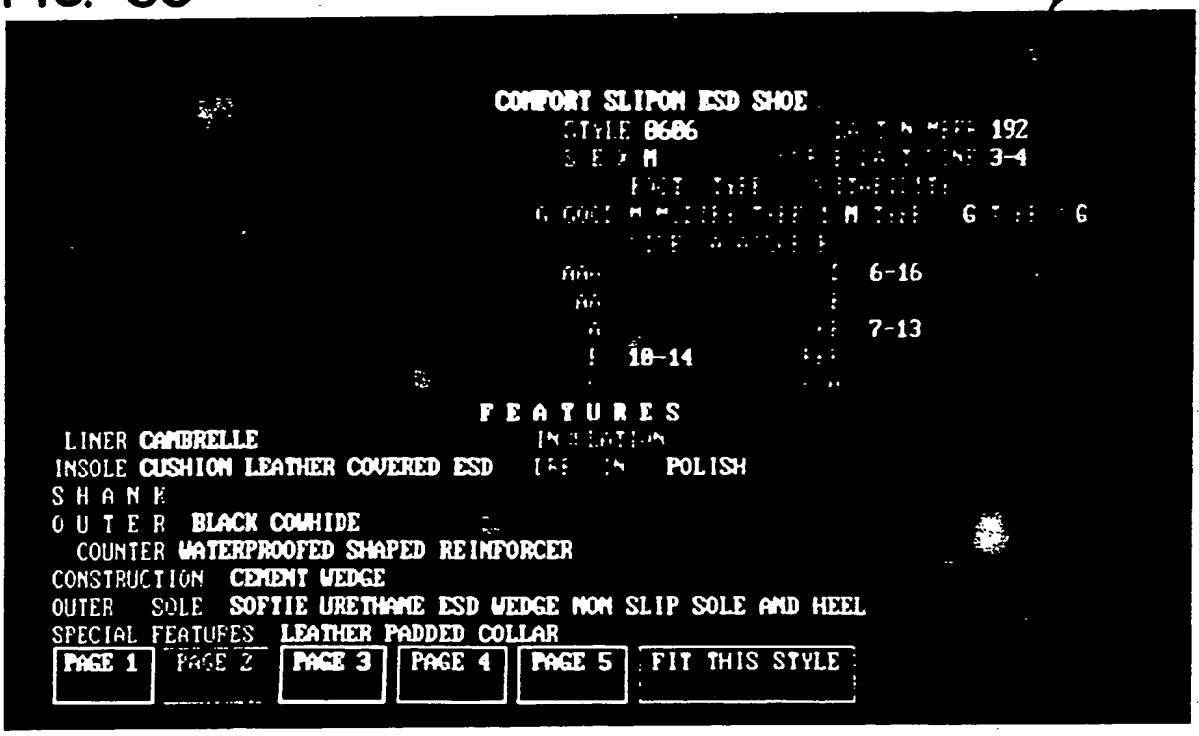
254
COMFORT SLIPON ESD SHOE
STYLE 8686
192
3-4
6-16
7-13
10-14
FEATURES
LINER CAMBRELLE
INSOLE CUSHION LEATHER COVERED ESD
POLISH
SHANK
OUTER BLACK COWHIDE
COUNTER WATERPROOFED SHAPED REINFORCER
CONSTRUCTION CEMENT WEDGE
OUTER SOLE SOFTIE URETHANE ESD WEDGE NON SLIP SOLE AND HEEL
SPECIAL FEATURES LEATHER PADDED COLLAR
PAGE 1
PAGE 2
PAGE 3
PAGE 4
PAGE 5
FIT THIS STYLE

FIG. 36

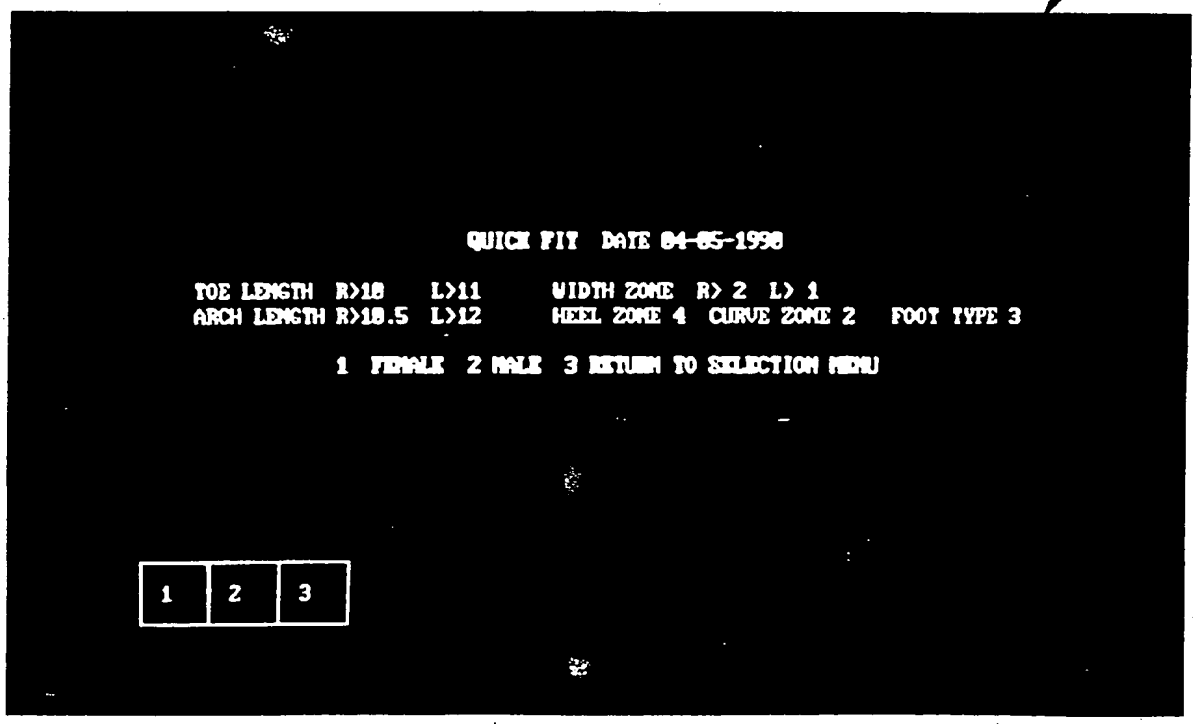
256
QUICK FIT DATE 04-05-1990
TOE LENGTH R>10 L>11
WIDTH ZONE R> 2 L> 1
ARCH LENGTH R>10.5 L>12
HEEL ZONE 4 CURVE ZONE 2 FOOT TYPE 3
1 FEMALE 2 MALE 3 RETURN TO SELECTION MENU
1
2
3

FIG.39

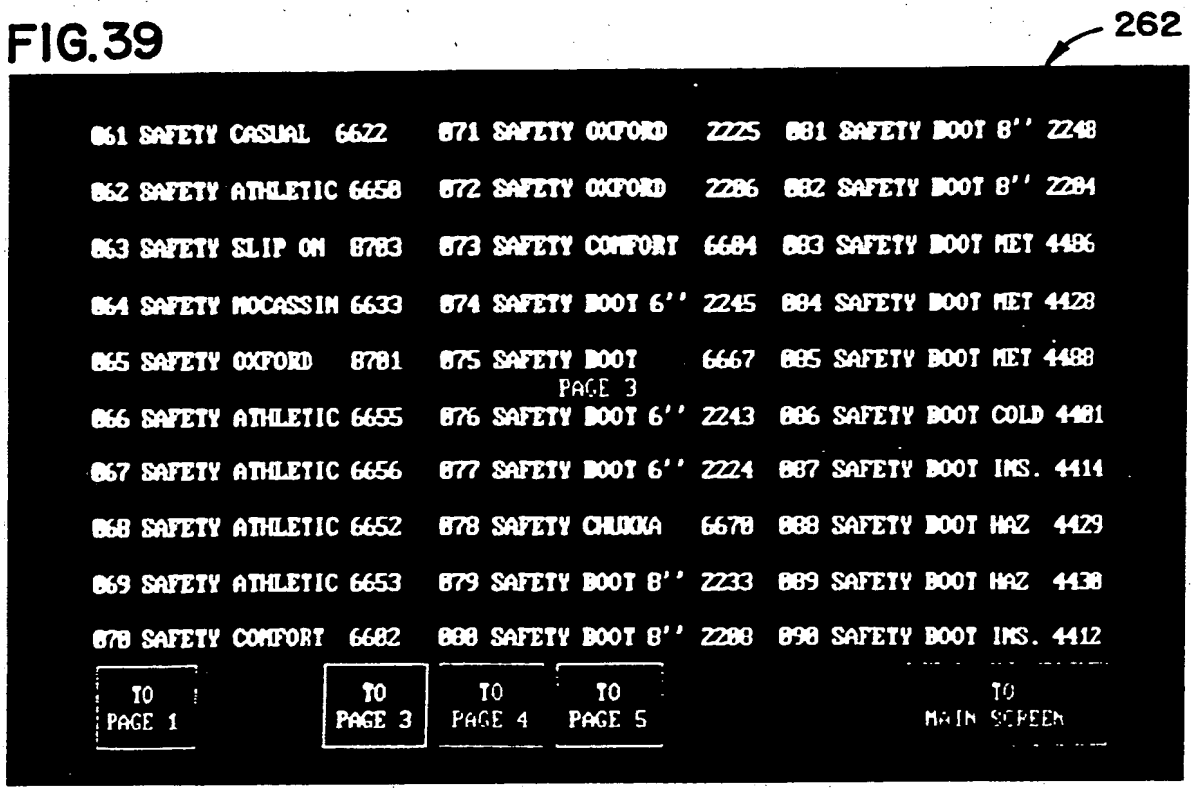

FIG.40

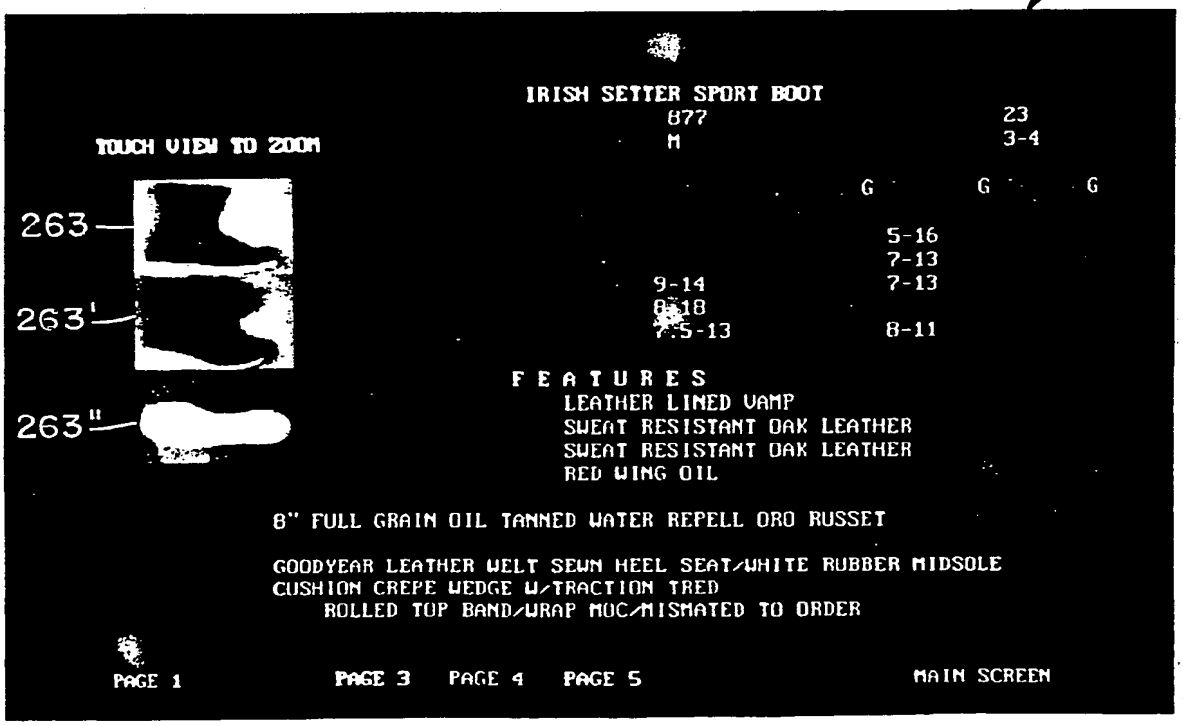

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FIG.43

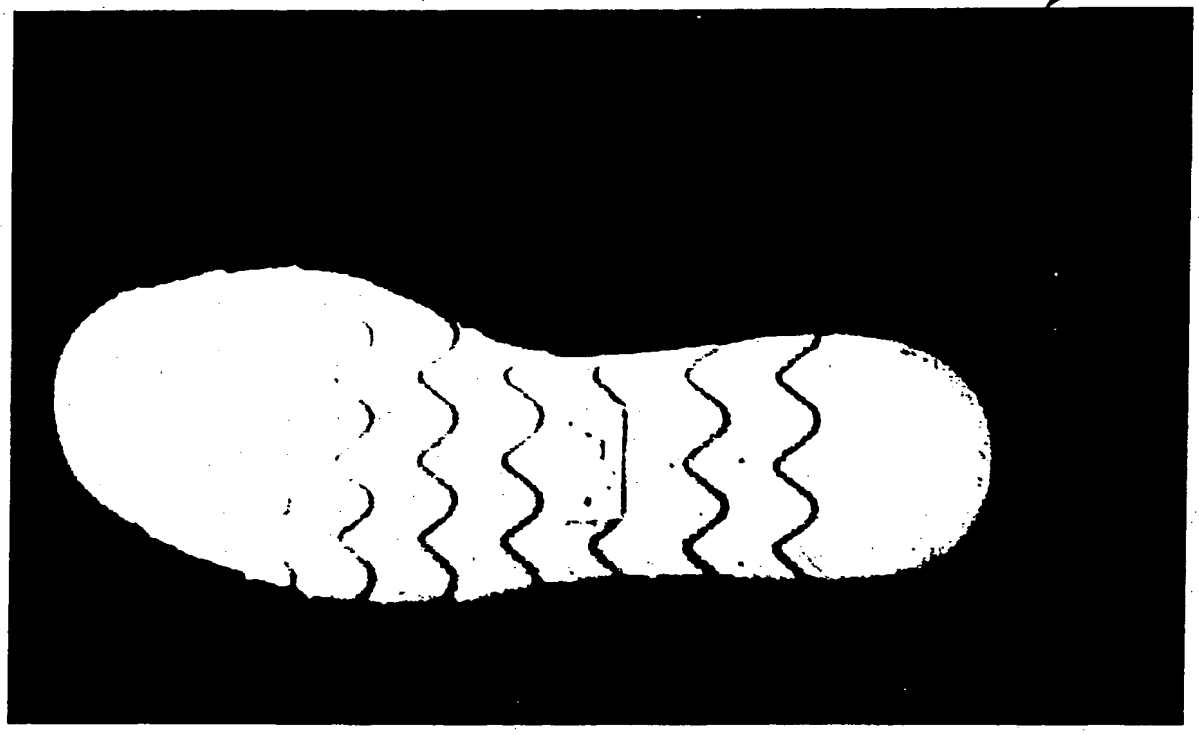
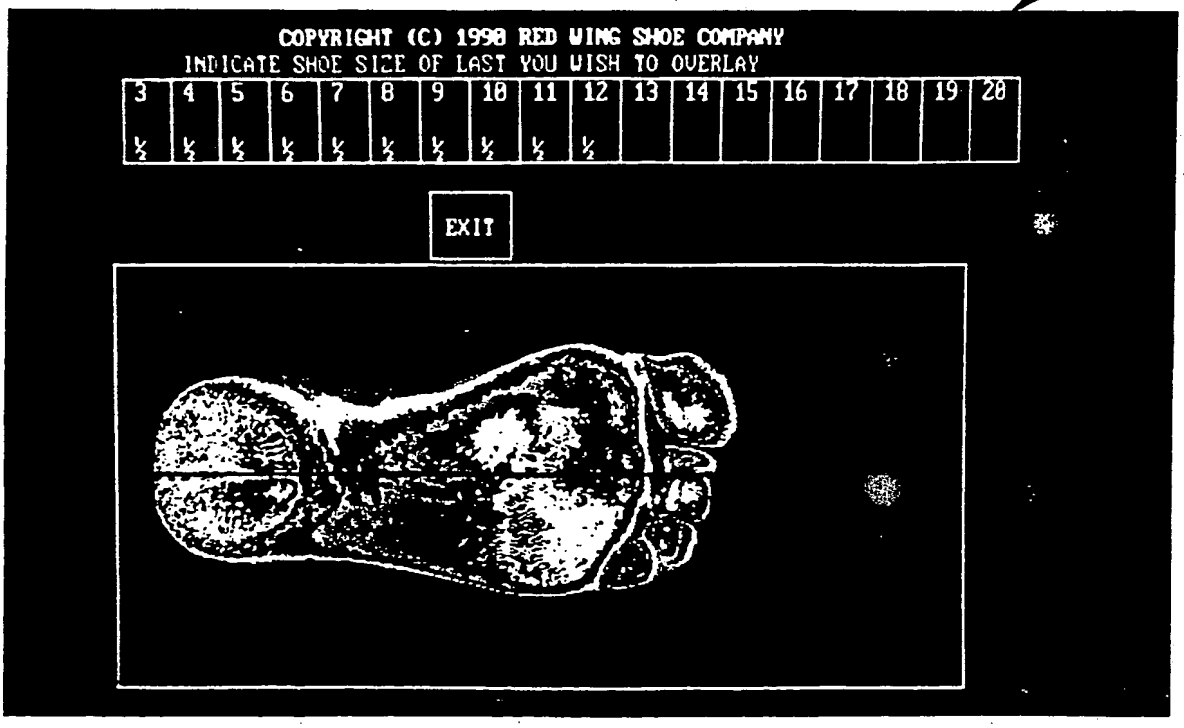


FIG.44



DOCID: <WO___9117676A1_I_>

FIG. 47

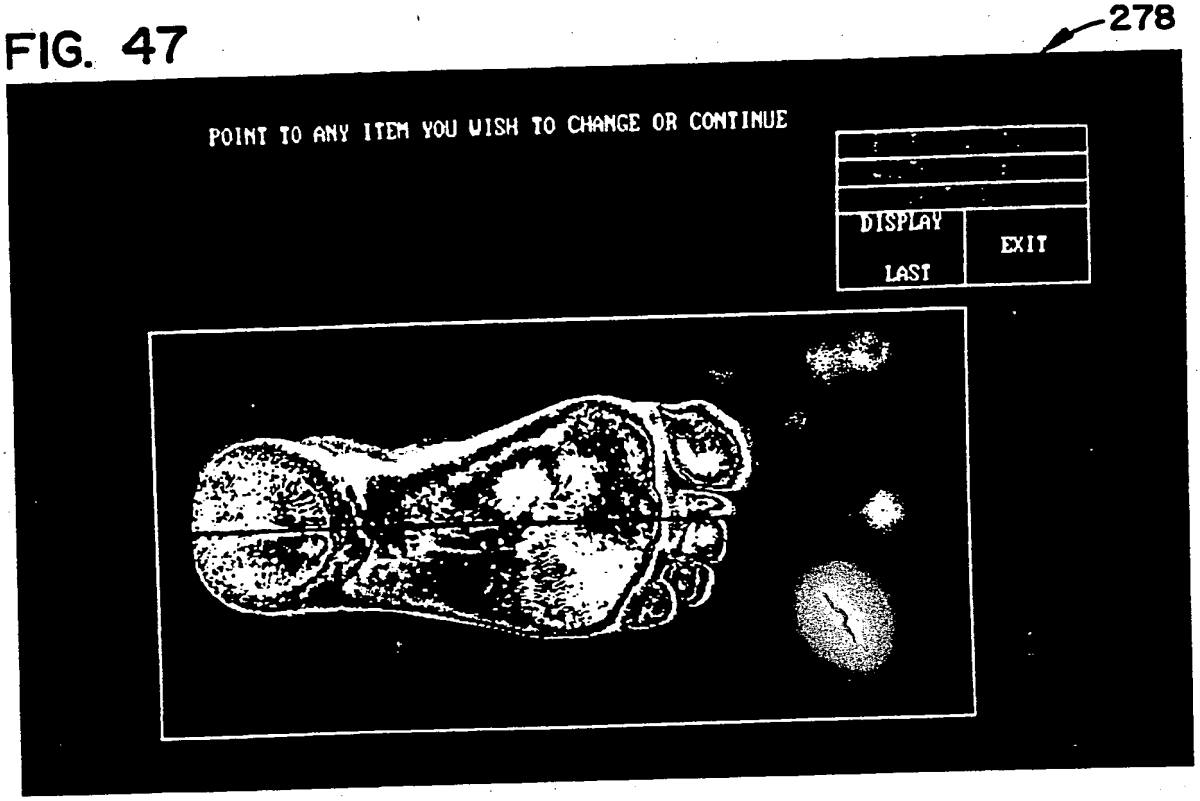
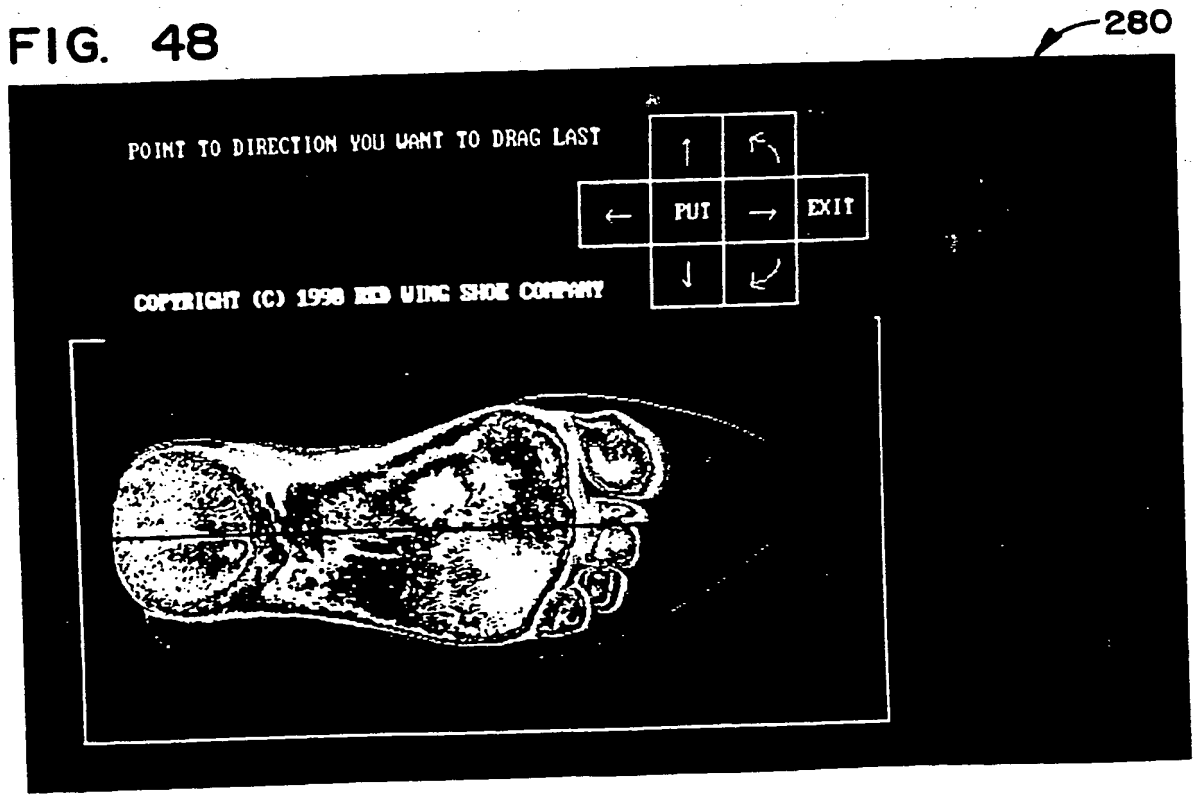


FIG. 48



)OCID: <WO___9117676A1_I_>

FIG. 51

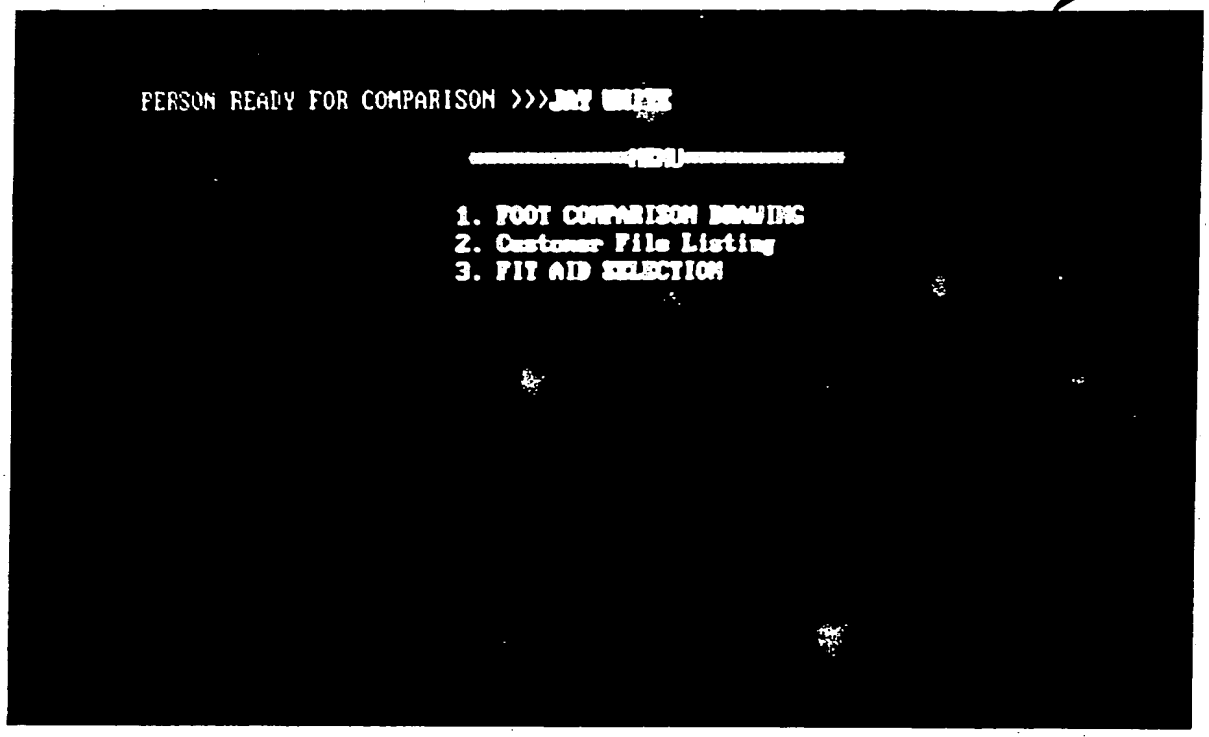
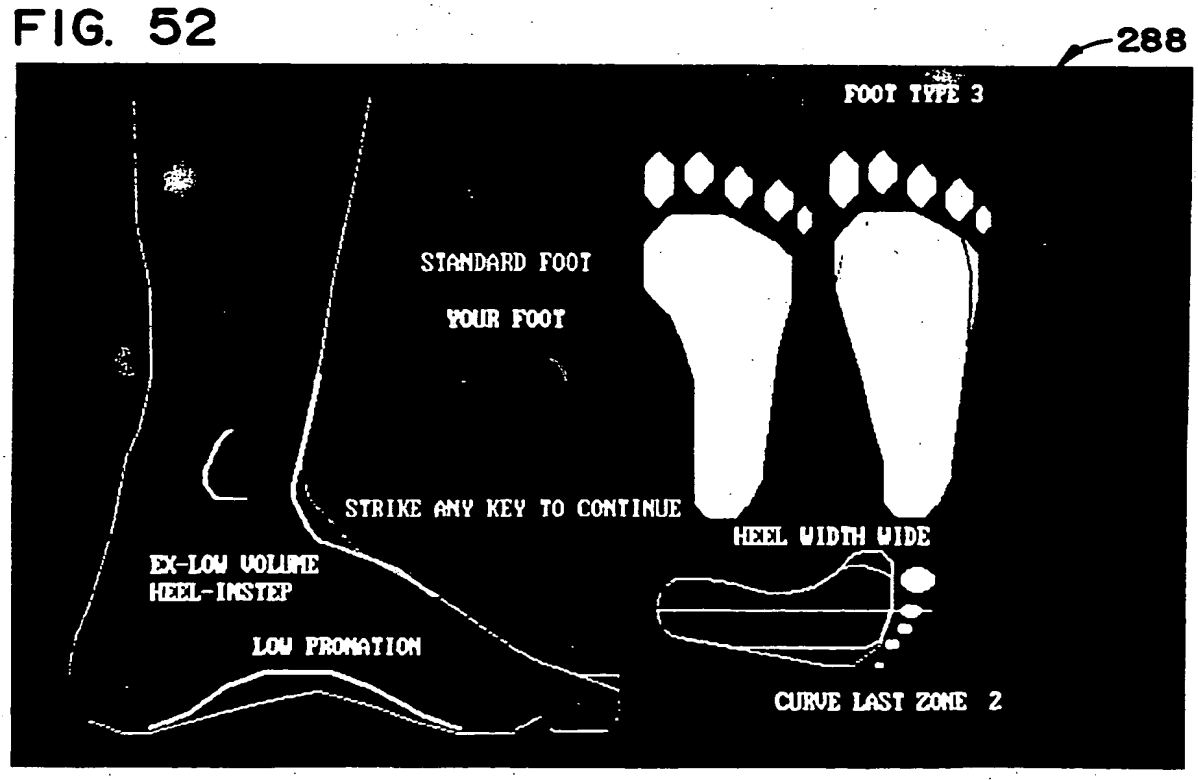


FIG. 52



IOCID: <WO___9117676A1_I_>

FIG. 55

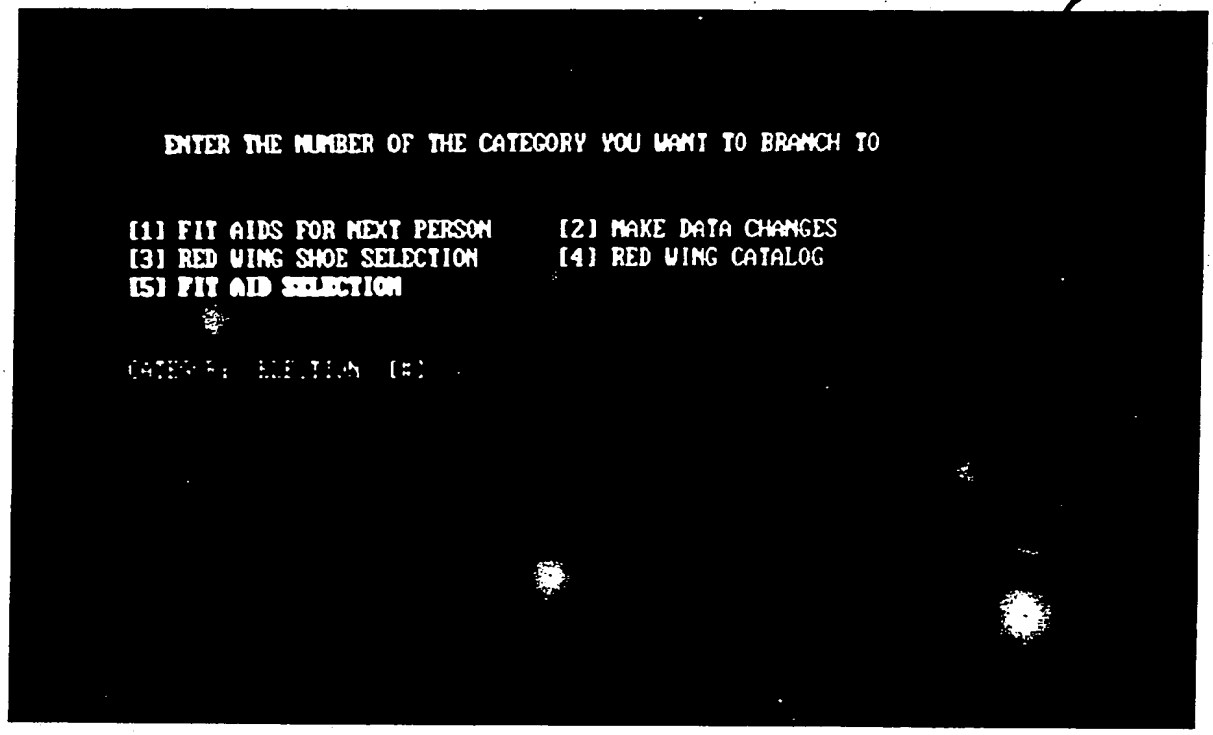


FIG. 56

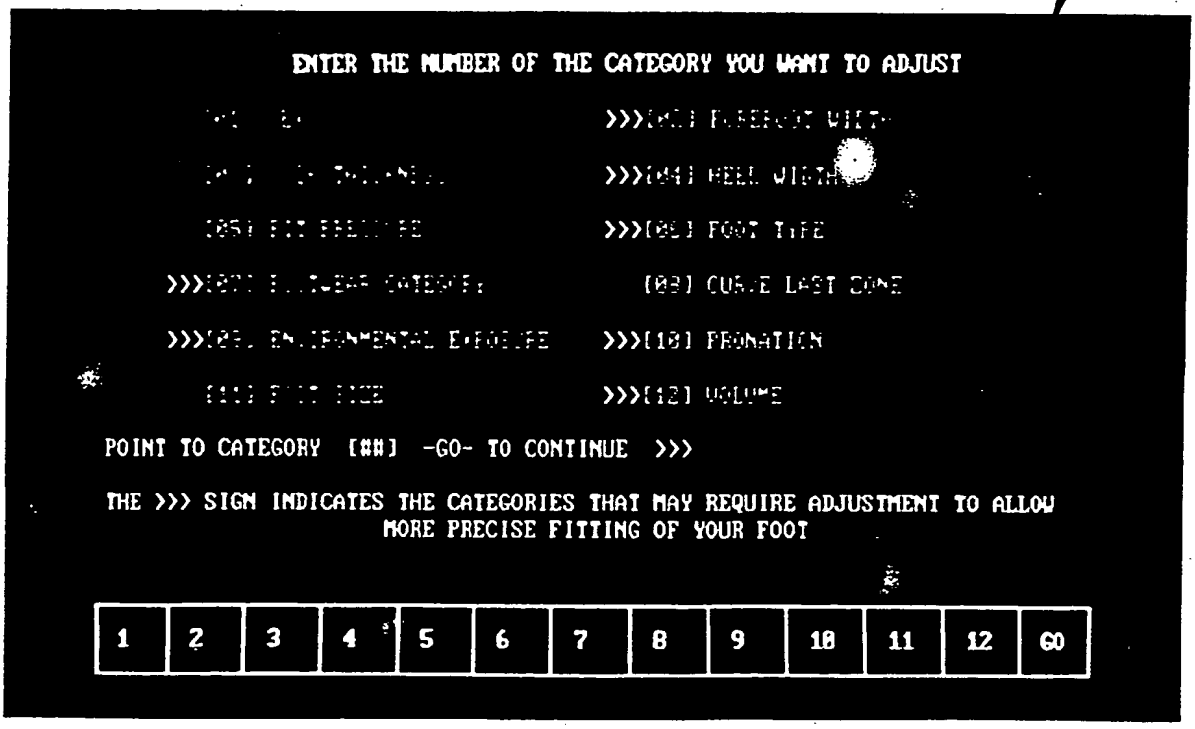


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FIG. 59

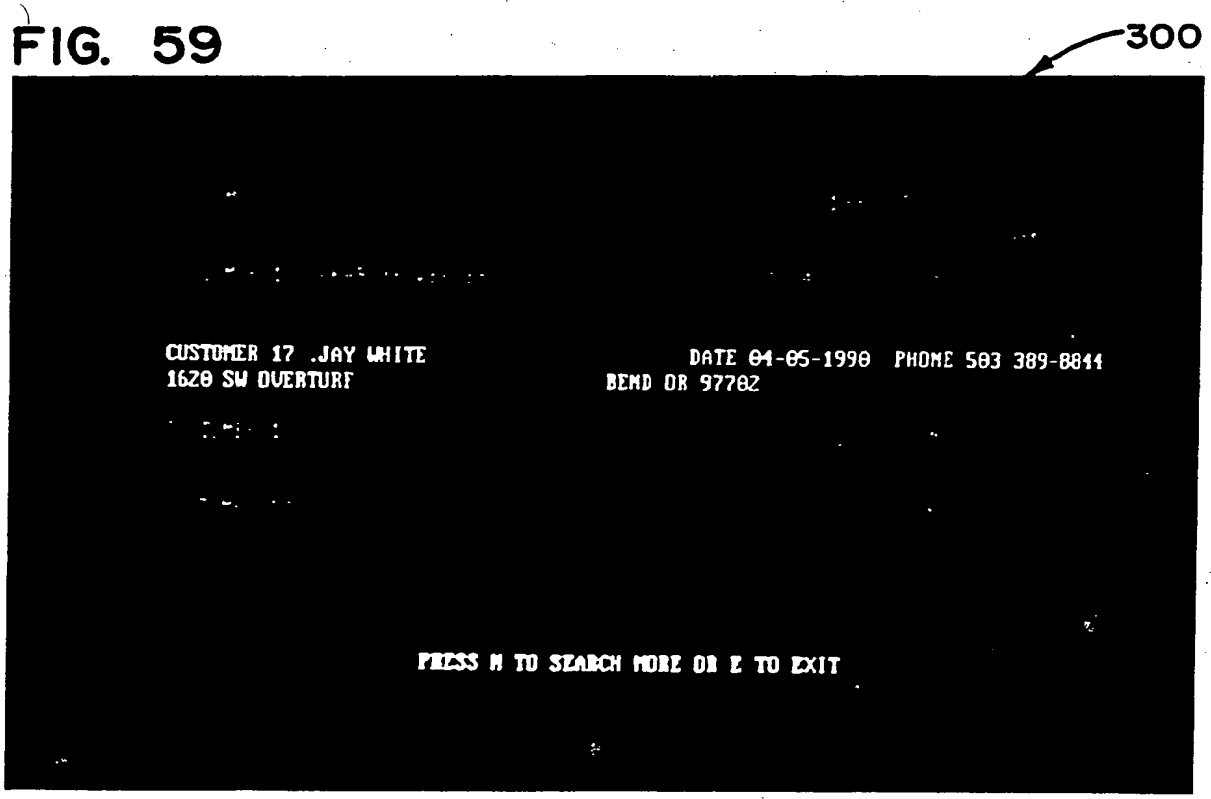

FIG. 60

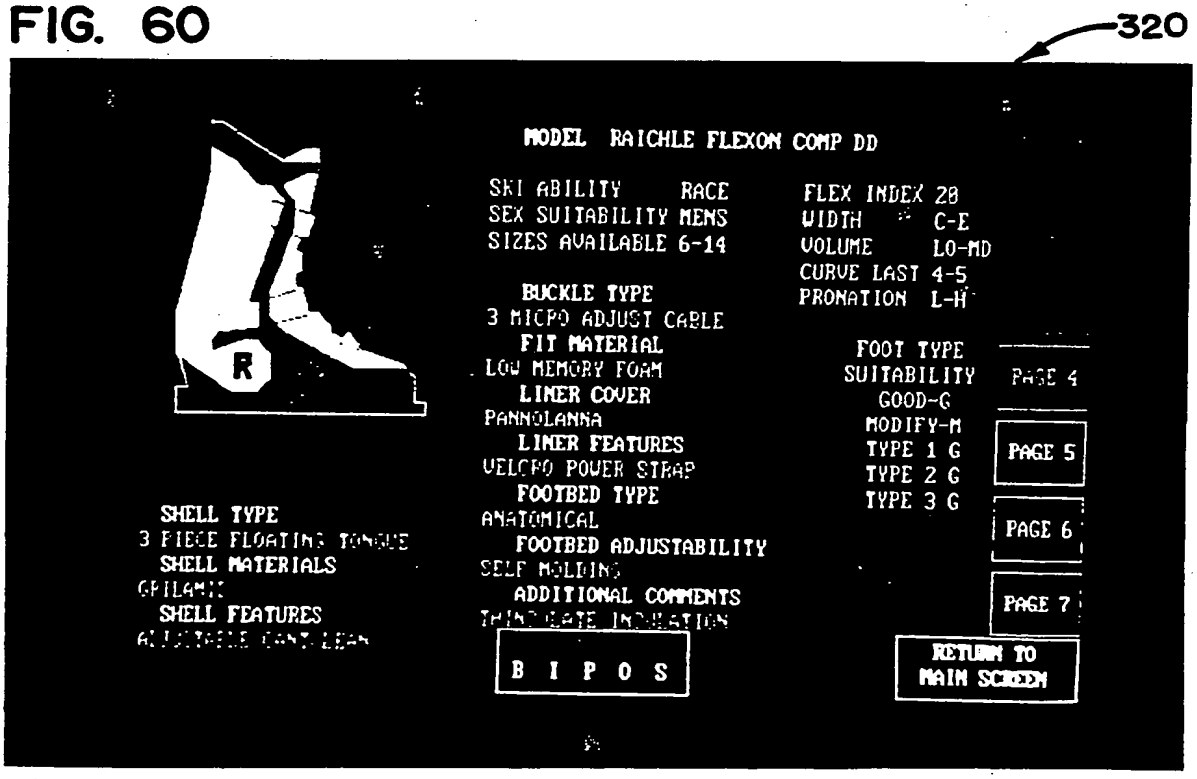

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FIG.63

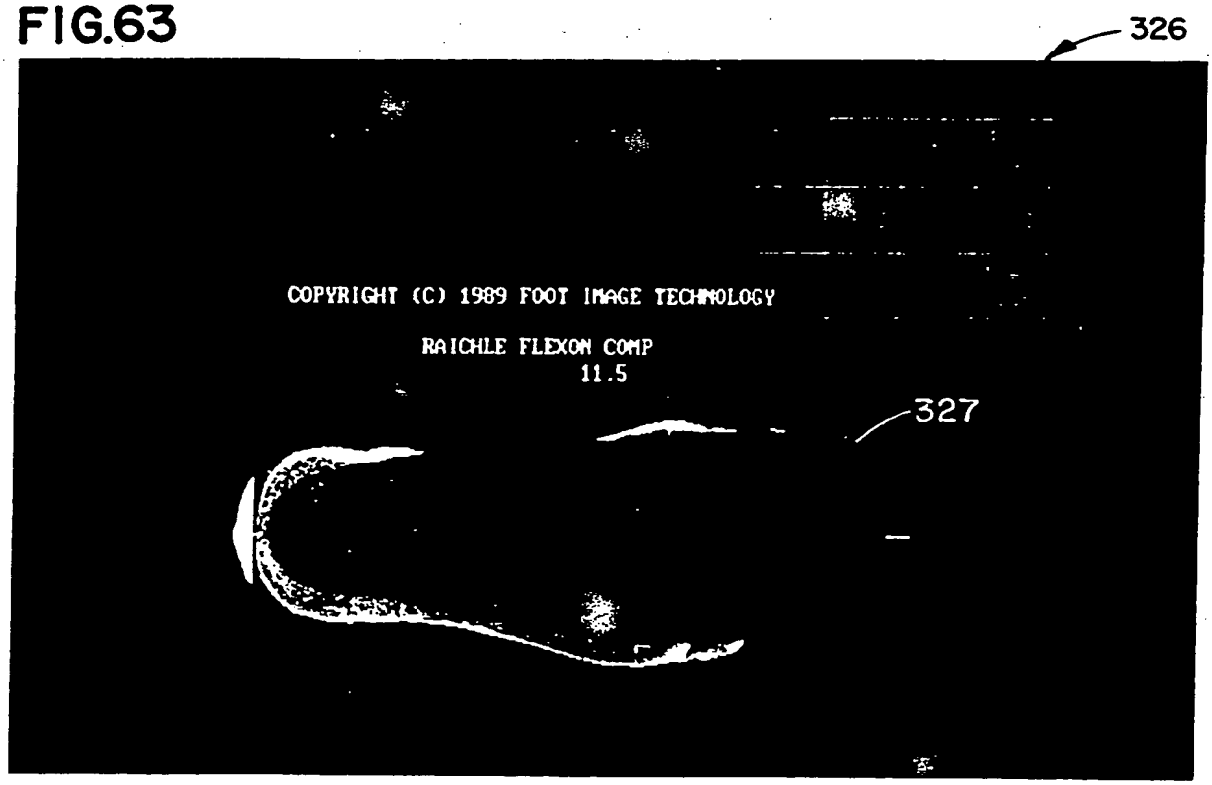
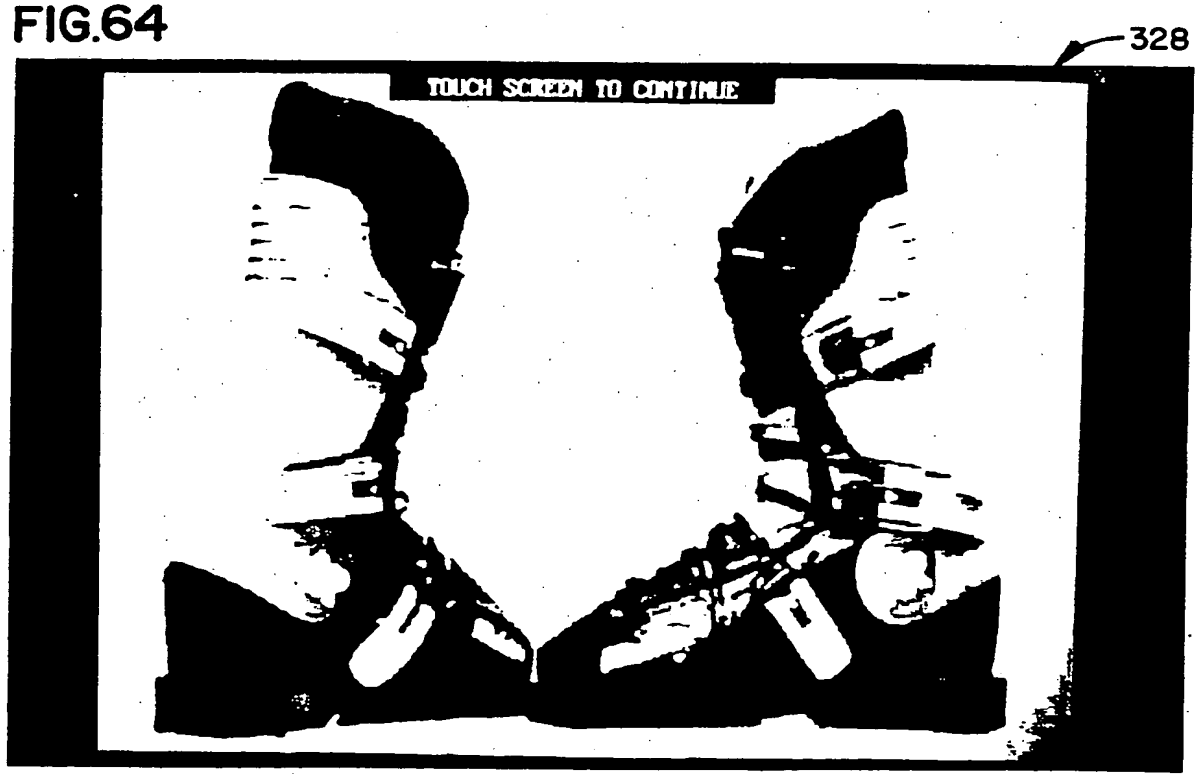
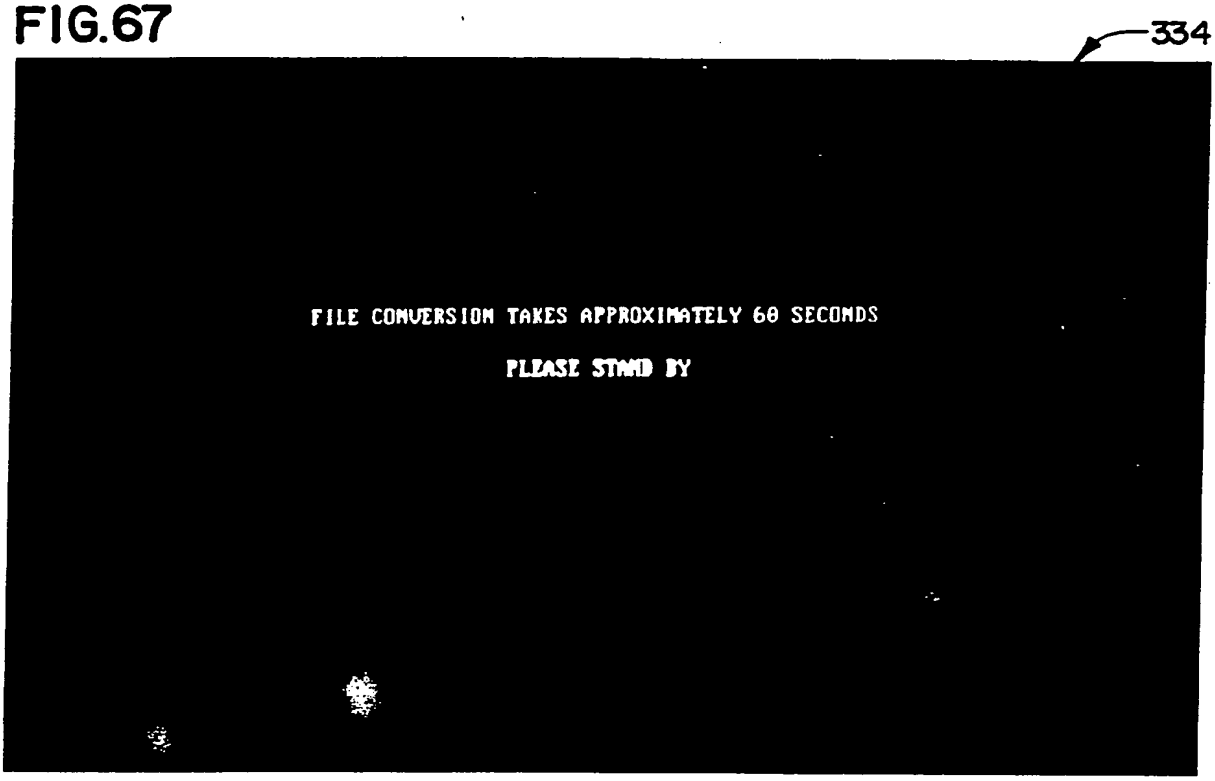


FIG.64



DOCID: <WO___9117676A1_I_>

FIG.67



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ANNEX TO THE INTERNATIONAL SEARCH REPORT ON INTERNATIONAL PATENT APPLICATION NO. US 9002868 SA 38682

This annex lists the patent family members relating to the patent documents cited in the above-mentioned international search report. The members are as contained in the European Patent Office EDP file on 15/01/91
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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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		AU-A- 4686485	26-06-86
		CA-A- 1235226	12-04-88
		GB-A,B 2169073	02-07-86
		JP-A- 61154539	14-07-86
		US-A- 4604807	12-08-86

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